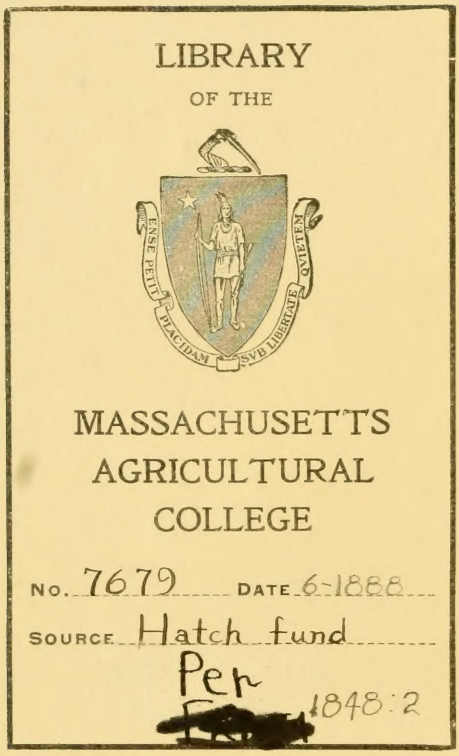
~~630 38F~~
1848 Pt. II
Hatch Fund.
No. 7679

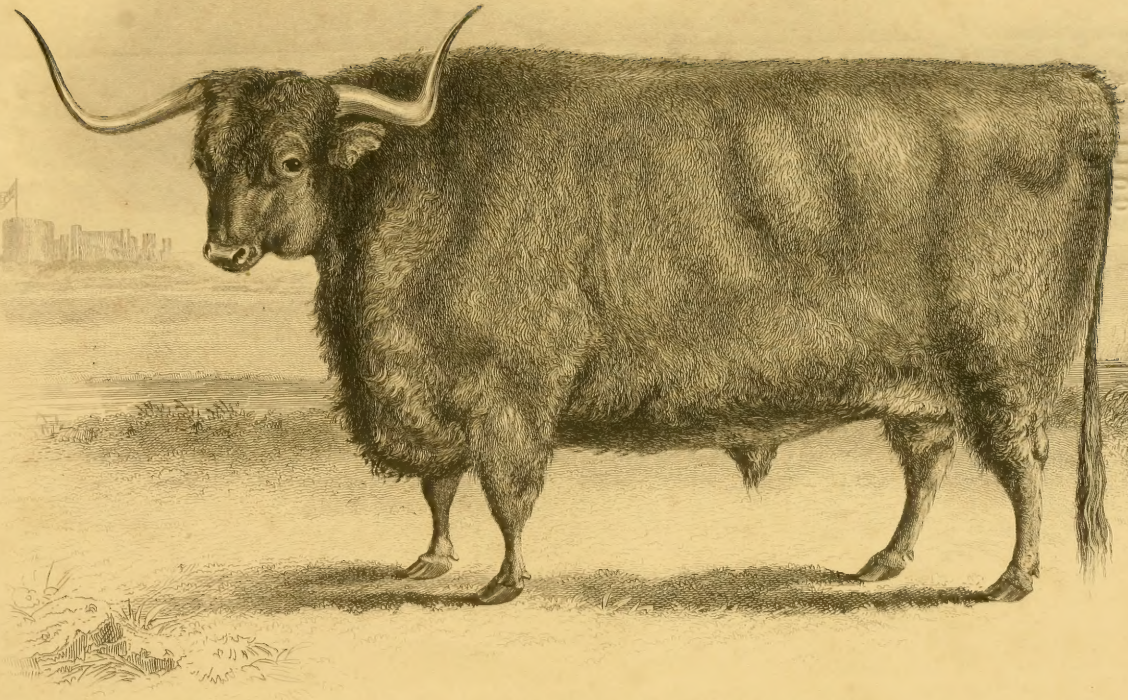


MASSACHUSETTS
AGRICULTURAL
COLLEGE
LIBRARY

MASSACHUSETTS
AGRICULTURAL
COLLEGE
LIBRARY

Per
F2254
1848:2

MASSACHUSETTS
AGRICULTURAL
COLLEGE
LIBRARY



W. H. Davis

E. Hacker

A West Highland Ox.

The Property of H. R. H. Prince Albert for which the First Prize in Class 6 was awarded at the Smithfield Club Dec.r 1847.

London. Published by Joseph Rogerson, 24 Norfolk Street, Strand. 1848.

INDEX TO THE EIGHTEENTH VOLUME.

(SECOND SERIES.)

A.

Agriculture, Geological Aids to. By C. W. Johnson, Esq., 291
Agriculture, Position of. By J. Towers, Esq., 490
Agriculture of Lews, 294
Agricultural Chemistry, Answer to "Remarks on Mr. Lawes' Paper" on, 478
Agricultural Chemistry Association, English, 30
Agricultural Chemistry, Progress of, 207
Agricultural Chemistry—Turnips, Remarks on Mr. Lawes' Paper on, 381
Agricultural Comparisons, odious and unfair, 55
Agricultural Intelligence, 470, 567
Agricultural Queries, 88, 367, 468, 561
Agricultural Reports, 84, 367, 468, 561
Agricultural Schools for Ireland, 170
Agricultural Societies—
Burton, 450
Cheshire, 443
Evesham, 455
Norfolk, 78
North Lincolnshire, 229
Agricultural Steam Company, 555
Agricultural Tillage, Observations on the Implements of, &c. By John Ewart, 303
Allotments, small, in Rutland, 233
Alluvial Soils, on the formation of. By C. W. Johnson, Esq., 386
Ammoniacal Liquor and Refuse of Gas-works, for agricultural purposes, 555
Answers to agricultural Queries, 367, 468, 561
Averages, imperial, 93, 190, 285, 380, 476, 572.

B.

Barley, Experiment on Australian. By R. W. Baker, Esq., 407
Bassetlaw, the Extent and Capability of the Hundred of, 163
Bricks, the Duty on, 309
Budding, Theory and Practice of. By J. Towers, 96
Bull, Description of a Devon, 287
Bull, Description of "Coningsby," a Hereford, 191
Bull, short-horned, Description of the "Baron of Ravensworth," 95

C.

Calves, on the rearing of, 61, 231
Cattle-show in Belgium, 307
Cattle-trade, Review of the, 84, 180, 278, 372, 465, 565
Cheese, Manufacture of, in the United States, 40
Claret Vine, and its Wine. By J. Towers, 364
Coal-grinder and Soil-presser, 230
Commons Enclosure and Improvement Act, 370
Copyholds, Enfranchisement of, 47
Corn breaking down, what is the Cause? 553
Corn Trade, Review of the, 90, 186, 281, 377, 472, 568
Cottages at Abbey Mains, Report on Lord Blantyre's Improvements on the. By Mr. Wm. Goodlet, 70
Cottages, Agricultural Labourers' 8
Cow, Description of "Hope," a short-horned, 478
Currency, per imperial measure. 189, 285, 380, 475, 572
Cymba, the winner of the Oaks, her pedigree and performances, 477

D.

Dairy Distillery in Bohemia, 157
Deodorizer, Peat Charcoal the best, 154
Deodorizing Fluids, 101
Drainage of Land, 7
Draining in Suffolk, antiquity of thorough, 29
Draining Pipes and Tiles, on the invention of. By James White, 393

E.

Europe, Area and Population of the various States in, 444
Ewes, description of Cheviot, 287

F.

Farm Horses, on the Feeding of. By Mr. James Carmichael, 44
Farm Labourers' Wages, 555

Farm (Scotch) on the Duke of Somerset's Totness Property, 169

Farmers' Clubs—
Bakewell, 162
Beccles, 80
Darlington, 194, 209
Ecclesfield, 503
Harleston, 7, 556
Netherexe, 49
Newcastle, 104, 164, 262
Sprotborough, 447
St Germains, 554
West Herefordshire, 57
York, 541

Feed, on early Spring, 402
Fire-engines for Farmers, descrip- of Baddeley's, 530
Flax, Price of, 286
Food, Adulteration of. By J. Towers, 388
Food, Consumption of, by large and small Animals, 53
Food, Mitchell on the falsification of, 152

G.

Grain, comparative Price of, 93
Grass Lands, inferior. By C. W. Johnson, Esq., 192
Grass Lands, on the Advantage of breaking up. By R. Reman, of Donnington, 2
Grass Land, on the Management of (Prize Essay). By Robert Smith, 321
Guano, Fraud in the Sale of, 559

H.

Hail Insurance, 556
Hail-storm, terrible, in France, 301
Hail-storms, 185, 309
Harvest, Hints for, 196
Haymaking. By C. W. Johnson, Esq., 4
Highland Society of Scotland, 224, 226
Holland, Industry and Commerce of, 237
Hops, Prices of, 94, 190, 286, 380, 476, 572
Horse, on choosing a, 214
Horses, as farming stock, on the Breeding of, &c. By F. C. Cherry, Esq., V.S., 269
Horses, Indigestion in, 313
Horticulture, Calendar of, 82,176, 275, 368, 461, 563
Hydraulic Engine, Walker's Patent, 198

I.

Imperial Bushel, 540
Instinct, Exemplification of, 365
Irrigating Land in Norway, 265

L.

Land, Evidence of ancient dry, 558
Lease, Breach of Covenant under a farming (Ellman *v.* Hipwell), 203
Leases of Land in Scotland, 234

M.

Malt Tax, Repeal of the, 308
Manure, liquid, 236
Meat from Australia, 300
Meteorological Diary,89,179,274, 371, 463, 562

N.

Navigation Laws, British, 301
Night-soil, deodorizing, 81

O.

Ox and Sheep, a Lecture on the Anatomy, &c., of the Digestive Organs of the. By James B. Simonds, Esq., V.S., 239
Ox, Highland, Description of, 1

P.

Pasture Land, a Method of breaking up. By Francis Woodward, 296
Phosphoric Acid, description of a Map in Illustration of the researches for, 1
Phosphoric Acid, on its presence in different geological strata. By J. C. Nesbit, 10
Phosphoric Fossils in green sand formation. By A. Gyde, Esq., 14
Pleuro-pneumonia amongst cattle, 273
Pleuro-pneumonia, the history, nature, pathology, and treatment of. By James Mercer, 35
Poor Price to Fred. Farmer, 406
Potato Disease, 109, 316
Potato, incidental Diseases. By J. Towers, 255
Potatoes, prices of, 94, 476, 572
Pump for draining Marshes, description of Appold's centrifugal, 548

R.

Railway Notes, 257
Ram sale at Winterbourne Stoke, 233
Royal Agricultural Society of England, 73, 151, 217, 557
Royal Agricultural Society of England, Meeting at York, 111
Royal Agricultural Society's Show, on the overfed state of Animals exhibited at, 273
Rye grass, on a variety of Italian. By W. Dickenson, 64

S.

Salt, Boussingault's Experiments with, 103
Sawdust charring and Clay burning, 48
Seeds, Prices of, 94, 190, 286, 476, 572
Selmes, Samuel, Esq.,Testimonial to, 225
Settlement, Law of, 449
Sewage-house. By C. W. Johnson, Esq., 488
Sheep breeding, 552
Sheep, description of a Pen of Southdowns bred by the Duke of Richmond, 477
Sheep, new Oxford, description of, 191
Sheep, Sale of David Barclay's, Esq., 366

Sheep, Sale of the Gore Farm stock, 366
Sheep, the Small-pox in, 155, 266, 305, 365, 441
Sheep, which is the most profitable Breed? 222
Smithfield Cattle Market, 550
Smut in Wheat, on, 390, 391, 547
Soils; their constituent Elements, 302
Southdowns, Sale of, 232
Stables, Management of, 492
Stacks, Roadside, 315
Stock, Sales of agricultural, 376, 456, 566
Surplice, winner of the Derby, his pedigree and performances, 381

T.

Tenant-right, 159, 311
Tenant-right Committee, 310
Tenant-right, Evidence of
James Stewart, Esq., 338
Mr. William Hesseltine, 347
Mr. Thomas Calvert Beasley, 353
Mr. Charles Stokes, 359
Chandos Wren Hoskyns, Esq., 408
Mr. Edward Wollett Wilmot, 414
Mr. Robert Blyth Harvey, 421
Mr. James Grindling Cooper, 429
Mr. Samuel Jonas, 432
Mr. William Bennett, 509
Mr. William Hutley, 520
Mr. Richard Croft Chawner, 526
Mr. Charles Higley Lattimore, 529
Mr. Edward Carter Hughes, 535
Tenant-right Report, 335
Tenant-right, Letter to the advocates of, 299
Tithe Commission, 223
Trout, Mr. Thomas, presentation of Plate to, 238
Tup Show, Jonas Webb's, of Babraham, 168
Turnip, culture of the, and its congeners. By J. Towers, 15
Turnip plant. By C. W. Johnson, Esq., 98
Turnips in Scotland, on the storing of, 72
Turnips, on autumn clearing stubbles preparatory to, 288

U.

Under-draining in East Suffolk, Report of Committee, 442

V.

Vagrancy, systematic, depicted, 297
Van Tromp, the winner of the St. Leger, his pedigree and performances, 95
Vegetable Instinct, 54

W.

Wages, low, the impolicy of, 440
Whitmore, W. W., Esq., visit to his Experimental Farm, 445
Wool Fairs
Chelmsford, 80
Thetford, 175
Wool, long, on the British Trade, 173
Wool Markets, 94, 190, 286, 476, 572

THE EMBELLISHMENTS.

	Page
A West Highland Ox, the property of H.R.H. Prince Albert	1
A Geological Map and Section, in illustration of the Researches in Phosphoric Acid	1
Elevation, Ground plans, &c., of Labourers' Cottages	8, 9
Cast of Turrelite Upper Green Sand	12
Section of Eastware Bay	15
A Short-horned Bull	95
Van Tromp, the winner of the St. Leger	95
Hereford Bull	191
New Oxford Rams	191
Sections of Walker's Hydraulic Engine	198, 199, 201
Coal-grinder and Soil-presser	230
Illustrations on a Lecture on the Digestive Organs of the Ox and Sheep	241, 242, 243, 244, 246, 247, 248, 249, 251, 253, 254
A Devon Bull	287
Cheviot Ewes	287
Illustrations of Agricultural Implements	290
Surplice, winner of the Derby	381
Invention for cutting Drains	395
Cymba, winner of the Oaks	477
A Pen of Southdown Sheep, bred by the Duke of Richmond	477
A Short-horned Cow	478
Baddeley's Farmers' Fire-engine	539
Appold's Centrifugal Pump for draining Marshes	548

Geological Map of PART OF ENGLAND,

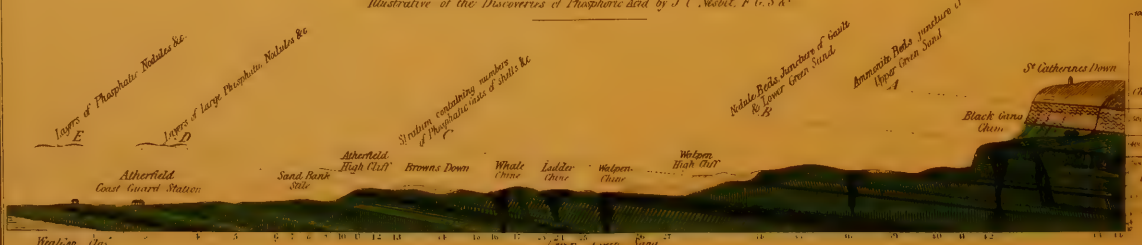
by T. M. M. Cregan, Esqre, C. E.

Illustrative of the Localities of Phosphoric Acid.

Stratigraphical Section from Atherfield Point to Black Gang Chine, (Isle of Wight.)

by T. M. M. Cregan Esqre C. E.

Reduced from Dr Fittons Section Trans Geol Soc Vol 5. with additions Illustrative of the Discoveries of Phosphoric Acid by J. C. Nesbit, F. G. S. &c



Horizontal Scale

0 1000 2000 3000 4000 5000 Feet

Note. *The Vertical Scale is Three times the Horizontal.*

REFERENCE TO SECTION.

Chalk — Upper Green Sand — Gault — Lower Green Sand

THE FARMER'S MAGAZINE.

JULY, 1848.

No. 1.—Vol. XVIII.] [Second Series.

PLATE I.

The subject of our Plate is a five-year-old Highland Ox, exhibited by His Royal Highness Prince Albert, at the last Smithfield Club Cattle Show, and which obtained a Prize of Ten Sovereigns in Class VI. for Oxen or Steers of the Scotch, Welsh, or Irish (Kerry) breed, of any age, without restriction as to feeding. It was considered a very fine animal.

PLATE II.

GEOLOGICAL MAP AND SECTION, IN ILLUSTRATION OF THE RESEARCHES ON PHOSPHORIC ACID.

BY J. C. NESBIT, ESQ., F.G.S., M.C.S.L., &C.

A geological map is one on which, from practical observations, the various strata are laid down and displayed by different colours. The map accompanying this paper is particularly intended to give, at a glance, a general geological knowledge of a part of this kingdom, as well as the position of the principal phosphatic strata. Gentlemen resident in various localities will thus, without much trouble, be able to ascertain, by their vicinity to strata of this nature, the probabilities of finding phosphate of lime on their estates.

The line of the CHALK on the map is coloured yellow. All the uncoloured part of the map eastward of the chalk, from Dorset to Norfolk, may be reckoned as TERTIARY, with the exception of that part marked as WEALD. The localities in the vicinity of which the crag Coprolite may most probably be found are marked as TERTIARY CRAG. A short description of the tertiary formation will be found in the first part of this paper, in the June number of the magazine.

The UPPER AND LOWER GREEN SANDS AND GAULT are together represented by that part of the map coloured green. It must be borne in mind that the Upper Green Sand lies nearest the Chalk; then the Gault; and afterwards the Lower Green Sand. One range commences at Folkestone, and terminates at Eastbourne. Another is found westward of the Chalk from Dorset to Yorkshire. These strata are likewise found in Somersetshire and Devonshire. A more detailed description will be found in the accompanying paper (p.10).

Westward of the range of Green Sand and of the fen land of Cambridgeshire and Lincolnshire, we have the OOLITIC DEPOSITS. More westerly still comes the LIAS; on the map coloured blue. The description of these strata is deferred to a forthcoming part of the researches.

THE SECTION represents the strata from St. Catherine's Down to beyond Atherfield, in the Isle of Wight. Within a short distance are beautifully shown, in their proper respective positions, the Chalk, the Upper Green Sand, the Gault, the Lower Green Sand, and the Weald Clay.

The bed of phosphatic nodules and casts of shells described in the following paper are represented *in situ* at A, between the Chalk and Upper Green Sand. On this section are depicted five other localities of phosphoric acid; a description of which will be given in the third part of this paper.

The map and section, which do not pretend to greater accuracy of detail than their limited size will permit, were carefully prepared under my directions by T. M. M. Cregan, Esq., professor of mathematics and civil engineering in our establishment; and to whom I beg publicly to tender my best thanks for his assiduity and skill.

ON THE ADVANTAGES OF BREAKING UP GRASS LAND.

BY R. BEMAN, DONNINGTON, NEAR STOW-ON-THE-WOLD.

[The following essay was unsuccessful in obtaining the Prize of the Royal Agricultural Society. It is an extraordinary fact, and well deserving attention, that the author of the successful essay states the expense of cultivation at double what Mr. Beman does, and the produce at only one half. All the statements contained in this essay are from the actual practice and experience of the writer.—ED. F. M.]

Having had some experience in the conversion of poor pasture land into arable, and tasted of its benefits, I feel confident in declaring that if followed up to its greatest extent, it would tend more to the advantage of all classes of persons in Great Britain than in anything that has happened, either of a political or social nature, for many years past; in fact, there is not an individual in these realms but must be benefited by it; and I am sure, that if landed proprietors were aware how much they and the country generally were losing by suffering, or rather (which I fear is the case) by not allowing pasture land of a certain description to be cultivated for the purpose of growing corn, turnips, artificial grasses, &c., they would take quite different views, and instead of having covenants inserted in the agreements and leases, for a forfeiture of £50 per acre for every acre broken up by their tenants, they would make it imperative on them to break it up and cultivate. I wish not to be misunderstood, I do not mean the ox pastures of Buckinghamshire, or the dairy lands of Cheshire, Somerset, or Gloucestershire, but such lands that will neither feed beast or sheep, nor produce 20 cwt. of hay to the acre when mown; neither would I interfere with meadow-land contiguous to rivers, subject to flood. It not unfrequently happens that the inferior grass land with a clay subsoil, and not sufficiently drained, will rot sheep; which proves very disastrous to the occupier, whether landlord or tenant, and also a considerable loss to the consumer.

Having stated generally my conviction of the advantages in a national point of view, I will now endeavour to explain how each class is to be benefited. First upon the list stands the landlord, who I have no doubt will be enabled to obtain from 25 to 50 per cent. more rent than the tenant can possibly be able to pay for such land in its present state, and, in addition, derive great pleasure at seeing his tenant with a joyful countenance at each rent-day, from his being enabled to pay the rent, having had an increased produce both in corn and stock, and likewise finding that the labourers and their families are much better off, from their tenants being enabled to find plenty of employment at good wages, of which I shall feel it necessary to explain more fully hereafter.

Secondly, I will endeavour to show how the tenant will be affected by having the liberty to make the best of such lands, which I will divide into three heads, and take the first. No. 1. The strong heavy kinds with a clay subsoil, very tenacious, and too full of moisture, with a thin turf, which is generally composed of the worst description of grasses. The first operation to be performed is to thorough-drain it; and the best and cheapest way of accomplishing this object (supposing, which is generally the case, that stone is not to be found on the spot) is to dig a clay-pit as near the centre of the field as possible, and burn a sufficiently large heap with what we call slack or refuse coal, which is useless for any other purpose, and consequently to be had at very small cost, and spreading it over every layer of clay, until the heap is sufficiently large to fill the whole of the drains on the piece. The larger the heap the less coals will be required, for when the clay is well on fire it will almost keep a-fire of itself.* The next thing to be done, is to dig out the drains about three feet deep, six inches wide at the top and three inches at the bottom; and if the field lies in ridges, a drain must be put up every furrow, beginning near the heap of ballast or burnt clay, and then with small one-horse carts fill-in the drains with the burnt material to within three inches of the surface. The narrower the drains are cut, the less ballast will be required to fill them up. I would beg particularly to draw the attention of persons having wet land of this description to this mode of draining, being thoroughly convinced that it will prove the most effective and durable of any kind. The expense of this mode of draining will be very nearly as follows:—A cubic yard of the burnt material will cost somewhere about 10d., and will fill up rather more than 2 perches of six yards, which will be about 5d. per perch; digging out

* Since writing this article I find that no draining ought to be less than three feet deep; that being the case, the cost will be increased equal to what I have stated.

drain 3d., drawing and filling-in 2d.; making a total of 10d. per perch. I have adopted all the methods of draining that I have ever seen or heard of for forty years past; viz., wall, wedge, shuck, and rubble, with stones, turf, rammed clay with a shooter—called badger draining—black and white thorns, and other brush wood, and several sorts of tile; but this with the burnt clay is the best: neither moles, rats, nor rabbits can injure it. I caught the idea from having observed how quickly the water on the centre and sides of the railways, filled with such material, gets away after very heavy rains. I drained a field of very bad turf in this way, in the year 1843, which has been completely dry ever since, although in a dreadfully wet state before, so much so that rushes grew nearly half way up the sides of each land, and they are now completely eradicated. As soon as I had completed the draining, I had the field breast-ploughed, or pared and burnt, at a cost of 14s. per acre, by men; and as soon as the ashes were spread, breast-ploughed it again, and sowed it with rape or cole-seed, it being too late to plant turnips, not having had permission from my landlord to break it up until the month of May. I fed the rape off with sheep, and then breast-ploughed it again, at a cost of 6s. per acre, and dibbled it with Newberry's horse dibbling-machine, with four pecks of wheat to the acre, and the produce was five quarters to the acre, of beautiful quality. Expense of preparing the land for wheat, per acre:—Breast-ploughing 6s., seed-wheat 7s., dibbling (including use of machine and horses) 6s., harrowing after 1s., total £1 per acre. Now I conceive that it is impossible to perform the whole operation so cheap in any other way, and I am quite sure that it could not be done better, either for the crops or the land; in addition to which, it affords a great deal of employment to the labourers. Amongst the crop of wheat I planted two bushels of Italian rye-grass seed in the spring of 1844, which produced a great deal of sheep keep in the autumn of that year, and in the spring of 1845. It was shut up about the middle of April, and mown for hay, which likewise was a large crop; and as soon as the hay was off, I again breast-ploughed and burnt the field, and after the ashes were spread, subjected it as before to another breast-plough, and again dibbled it with wheat, which is now looking remarkably well. It will be observed, that I have had two green crops, one wheat crop, and the land planted again with wheat, without any other manure being applied than that that is produced by burning the surface, and that which is left by the sheep. My intention is to plant wheat upon it every alternate year,* with turnips and grass-seeds between, and to apply no other manure. I have another field adjoining this, which has been in similar cultivation for six years, and has produced three crops of wheat—the first 32 bushels, second 56 bushels, and last 32 bushels; two crops of turnips, and one crop of Italian rye-grass; and this field has had no other manure than what is before stated. I have two other fields of the same description of land, upon which I have, at the time I am writing this, ten men double breast-ploughing for Talavera wheat, after a crop of turnips, grown after a crop of Italian rye-grass, mown for hay, both grown in the summer of 1845. What I mean by double-breast-ploughing is, that it is ploughed two furrows deep, by one man following in the same furrow that another has made, and cutting another slice off, and turning it upon the same furrow thrown over by the first man. The two furrows are not more than one inch deeper than we generally plough at once; but my sheep had made the clay land so very hard and compact, by treading it, in wet weather, that it would not have worked well for the wheat without this process, and the additional expense is only 6s. per acre. No horse-plough has ever been, or intended to be, used in either. Peaty, boggy, deep loamy, and moor-land, would answer remarkably well under this system, and would produce wonderful crops. Neither of the fields that I have mentioned were worth more than from 15s. to 20s. per acre as turf. The tenant who preceded me in the occupation of two of the fields I first described, has declared to me that he has carried the crops of hay produced upon them at seven small loads, containing about 15 cwt. in each load, although the fields are sixteen acres; and that he had several times rotted his sheep thereon. I now consider them worth from 30s. to 40s. per acre.

The second description of grass lands that ought to be broken up, are the sharp gravels and keen sands; but quite a different mode of cultivation must be pursued with such: although, in the first instance, I should breast-plough (but not burn), after which I would dig it, and bury the turf, and plant turnips, to be succeeded by barley, laid down with artificial grasses; after which, wheat—being the four-field system.

The third is a very large, and at present very unproductive, breadth of light land in sheep-walks and heaths, which I would recommend to be cultivated under a six-field system. First year breast-ploughed, and burnt for turnips; second, barley or oats; third, artificial grass-seeds, to be mown; fourth, seeds grazed; fifth, wheat; sixth, rye-grass grazed; and then begin the course again by breast-ploughing and burning for turnips. I know land upon the Cotswold Hills that has been so managed

* I now get two green-crops each alternate year.

for upwards of thirty years, without one atom of dung having been put thereon, or any other manure—except on a few small plots, to try the effect of bone-dust and a small quantity of guano, if it would beat the ashes made from burning the surface, but it failed to do so—and it produces as good crops now as when first brought into cultivation; and it is a fact worthy of notice, that this land (about 100 acres) will maintain more sheep and beast now, although one-third of it is cropped with corn, every year producing large crops, than the whole of it did before it was converted into arable.

Thirdly: I will endeavour to show the advantages that will accrue to the labourer and his family, by adopting this plan. My aim has been, ever since I have been a tiller of the soil, to find as much employment as I possibly could for the labourer and his family; and I have invariably found that a sovereign paid for labour will go farther than twenty-five shillings given as relief, and that it is much better to employ the younger branches of a large family than to suffer them to apply to the relieving officer for assistance. The first induces a degree of independence, and habits of frugality; and the latter breaks the man's spirit, and tends to make him a pauper. And to show that very young boys, and quite old men, may accomplish breast-ploughing, I will here mention a circumstance that I think worthy of notice. In the month of July, 1844, I paid a visit to a brother-in-law of mine, who, like myself, patronises the system of breast-ploughing and burning; and in walking over his farm we came to his breast-ploughers, amongst whom was a man of eighty years of age, who told me that he had constantly breast-ploughed upon that farm for fifty years, doing but little else, except turnip hoeing, and reaping in the harvest: and in a very few days after, in going to a fair over the Cotswold Hills, my attention was attracted by seeing a very small person, with his father, breast-ploughing. Curiosity induced me to go and inquire his age, and I found that he was only eight years old. My men like it much better than thrashing in a barn; in fact, I am obliged to thrash nearly all my corn with machines, because they will not do it.

Now if the whole of the poor turf-lands I have described were to be converted into arable, and cultivated in the manner I have recommended, instead of sending away thousands of labourers to distant climes as emigrants, we should require many more than we have: and as judicious labour produces profit, it would add very materially to the wealth of the nation, and reduce the expenses of the agricultural poor-law unions in a very great degree. The price of labour, like every other commodity, is governed by supply and demand; and if we can by any legitimate means increase the demand, which would certainly be the case as soon as the thing became general, we should no longer be reproached by our manufacturing friends for not properly paying our labourers; indeed, it would produce such a change for the best in the agricultural districts, that few persons can contemplate.

The fourth party that will find benefit from this measure is rather a multitudinous one—no less than the whole of the population of Great Britain; for I will contend that if my plan be adopted, and carried out to its fullest extent, we should, instead of requiring a large importation of foreign grain, sheep, and cattle, costing millions of money every year, be very soon enabled to produce sufficient both of corn and meat to supply amply our vastly increasing population, and it would very soon, I have no doubt, produce through all the ramifications of society those effects so devoutly to be wished—contentment, happiness, and wealth.

February 26.

HAYMAKING.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

The time of haymaking very commonly sets the contrivance and the ingenuity of the farmer to work to counteract the ill effects of wet seasons or of too-long-neglected harvestings. At this period the observation peculiarly applies. The harvest has been in many districts much retarded by the wet. Partially-damaged hay is remaining out in most directions. It is, therefore, at such periods that we again may recur with advantage to the most useful modes of recovering injured hay. Several persons have recently revived the practice of mixing badly-made hay with dry straw or old hay. By this mode the superfluous moisture of the grass is absorbed, and excessive fermentation of the stack prevented. This is a very easy plan in those situations where the haymaker has an abundant supply of straw of the requisite quality. But a much more universally-practicable plan is to mix the hay with salt at the rate of from 20 to 28lbs. per load. Mr. J. Prideaux, in a recent valuable communica-

tion (*Mark Lane Express*, No. 860, p. 10), has given an instance or two of the successful use of salt in this way even in some bad cases. He observes, "An excellent farmer at Landrake, in Cornwall, many years ago stacked damp hay with salt, which came out almost a paste when the rick was opened; but the cattle devoured it greedily. In Germany they even cure fresh-cut grass by pitting it with salt, 1lb. to the cwt. It comes out quite a paste, and is said to go farther in food than the same quantity of grass made into hay. And in this country other green food has been kept in like manner." Mr. Prideaux, however, evidently inclines to the plan of mixing both the straw and the salt with the badly-made hay. He thinks that the advantage of dry straw to absorb the juice drawn out by the salt is twofold—first, in preventing the souring of the grass; and second, in rendering the straw itself more nourishing and palatable by the juice thus absorbed. The proportion of straw may vary, he adds, from one-eighth to one-fourth, and the salt from 1lb. to 3lb. per cwt., according to the dampness of the new hay. If old dry hay is used instead of straw, it must be in larger proportion, because less absorbent. For the use of salt, as a valuable addition to the hay-stack, I have long contended. The plan of mixing it, when too green or two wet at the time of stacking, with dry straw or old hay, is a contrivance only suggested in bad cases. Such occasions might be rendered much more rare if a little more attention was paid to the process of haymaking than at present; for, as I have had occasion to remark in a former communication, there are few harvestings which, generally speaking, are so ill-conducted. This, perhaps, may in a great degree be attributed to the very common want of knowledge, with regard to the chemistry of the operation, to the composition of the grass, the phenomena which result during its conversion into hay, and the most desirable objects to be regarded by the farmer during the operation. Let us then address ourselves, on the present occasion, to this very important inquiry, and endeavour to gather together a very few results which have been recently obtained by the laborious researches of the great chemical philosophers who have been so nobly striving to illustrate and to advance the objects of the haymaker. It is very true that, in a climate so varying as that of our islands and their different localities, the same degree of general success can hardly be expected to be attained in every situation; but this consideration does not vary the true objects for which every haymaker should strive, since these are the same in all districts, however wet or however dry the atmosphere in which the grass is cut. This variation in the climate of different portions of England is much more considerable than is commonly understood. The mean average depth of rain, in inches, falling in different counties during the haymaking months of June and July, is (Farmers' Ency., p. 1022; Johnson and Shaw's Farmers'Almanac, vol. ii., p. 11)—

	June.	July.
Hertfordshire	2.213	2.287
Manchester	2.502	3.697
Lancaster	2.512	4.140
Kendal	2.722	4.959
Glasgow	1.343	2.303
London	1.738	2.448

One very material and common error is the postponement of cutting the grass until it has become too ripe. The ill effect of this has been recently examined by Dr. Thomson, in his valuable researches upon the food of animals; and we cannot refer to his observations at a better period of our inquiry than this. The variety of grass used in his experiments was the common rye-grass (*lolium perenne*), and from it the hay which he employed was made (Parl. Paper, 1846,No. 190). It is probable, however, from the result of the three following analyses of hay made (No. 1) in Germany and (No. 2) France (the grass not being stated), and of rye-grass (No. 3) by Dr. Thomson, that the composition of hay does not in general very materially differ:—

	1.	2.	3.
Carbon	45.87	45.80	45.41
Hydrogen	5.76	5.00	5.93
Nitrogen	41.55	1.50	8.84
Oxygen	—	38.60	39.21
Ash	6.82	9.00	7.61

When, as Dr. Thomson remarks, grass first springs above the surface of the earth, the principal constituent of its early blades is water, the amount of solid matter being comparatively trifling. As its growth advances, the deposition of a more indurated form of carbon becomes gradually more considerable, the sugar and soluble matter *at first increasing*, then gradually diminishing to give way to the deposition of woody substance. The following table shows the composition of rye-grass, at three periods of its growth:—

	June 18.	June 23.	July 13.
Water	76.19	81.28	69.0
Solid matter	23.81	18.77	31.0

"These," adds Dr. Thomson, "are most important practical facts for the agriculturist; for if, as we have endeavoured to show, the sugar is an important element of the food of animals, then it should be an object with the farmer to cut grass, for the purpose of haymaking, *at that period when the largest amount of matter soluble in water is contained in it.* This is assuredly at an earlier period of its growth than when it has shot into seed;

for it is then that woody fibre predominates—a substance totally insoluble in water, and therefore less calculated to serve as food to animals than substances capable of assuming a soluble condition. This is the first point for consideration in the production of hay, since it ought to be the object of the farmer to preserve the hay for winter use in the condition most resembling the grass in its highest state of perfection. The second consideration in haymaking is, to dry the grass under such circumstances as to retain the soluble portion in perfect integrity." Now, from various experiments made by Dr. Thomas Thomson and Dr. R. D. Thomson, we find that "100 parts of hay are equivalent to 387½ of grass. This amount of grass should contain of matter soluble in hot water 28.13 parts, and in cold water 8.21 parts. But instead of this amount, we find that the equivalent quantity of hay, or 100 parts only, contains 16 instead of 28 parts soluble in hot water, and 5.06 instead of 8¼ parts soluble in cold water. A very large proportion of the soluble matter of the grass has obviously disappeared in its conversion into hay. The result of the haymaking, in this particular instance, has therefore been to approximate the soft, juicy, and tender grass to woody fibre, by washing out or decomposing its sugar and other soluble constituents. These facts enable us to explain the reason why cattle consume a larger amount of hay than is equivalent to the relative quantity of grass. Thus animals which can subsist upon 100lbs. of grass should be able to retain the same condition by the use of 25lbs. of hay, if the latter suffered no deterioration in drying. Our experiments, however, show that a cow thriving on 100lbs. to 120lbs. of grass required 25lbs. of hay and 9lbs. of barley or malt, thus affording collateral evidence of the view which we have taken of the imperfection of the process of haymaking at present in use in this country. The great cause of the deterioration of hay is the water which may be present, either from the incomplete removal of the natural amount of water in the grass by drying, or by the absorption of this fluid from the atmosphere. Water, when existing in hay from either of these sources, will induce fermentation—a process by which one of the most important constituents of the grass—namely, sugar—will be destroyed. The action necessary for the decomposition of the sugar is induced by the presence of the albuminous matter of the grass: the result is, that the sugar is converted into alcohol and carbonic acid." "That alcohol," continues Dr. Thomson, "is produced in a heated haystack in many cases may be detected by the similarity of the odour disengaged to that perceptible in a brewery. We use this comparison because it has been more than once suggested to us by agriculturists." As to the removal of this moisture in the grass, he adds, "The quantity of water or volatile matter capable of being removed from hay at the temperature of boiling water varies considerably. The amount of variation during our experiments was from 20 to 14 per cent. If the lower per-centage could be attained at once by simple drying in the sun, the process of haymaking would probably admit of little improvement; but the best new-made hay that we have examined contained more than this amount of water, the numbers obtained verging towards 20 per cent. When it contains as much as this, it is very liable to ferment, especially if it should happen to be moistened by any accidental approach of water. The only method which we have found to succeed in preserving grass perfectly entire is by drying it by means of artificial heat. Rye-grass contains, at an early period of its growth, as much as 81 per cent. of water, the whole of which may be removed by subjecting the grass to a temperature considerably under that of boiling water; but even with a heat of 120 deg., the greater portion of the water is removed, and the grass still retains its green colour—a character which appears to add greatly to the relish with which cattle consume this kind of provender. When this dried grass (as it may be truly termed, by way of distinction from hay) is examined, it will be found to consist of a series of tubes, which, if placed in water, will be filled with the fluid, and assume in some measure the aspect of its original condition. The advantages attained by this method of making hay, or rather of preserving grass in a dry state, are sufficiently obvious. By this means all the constituents of the grass are retained in a state of integrity; the sugar, by the absence of water, is protected from undergoing decomposition; the colouring matter of the grass is comparatively little affected; while the soluble salts are not exposed to the risk of being washed out by the rains, as in the common process of haymaking."

Having thus noted the chemical changes which it should be our duty to retard and regulate in haymaking, let us next inquire how in practice we can best approximate to the conditions we have thus seen to be the most correct. The plan of artificially drying grass, as suggested by Dr. Thomson, we can hardly deem to be practically attainable, although we may quite agree with him in the conclusion, that in many of the wet and cold northern districts of this island, where building materials and fuel are commonly reasonable, it is very desirable that the farmer should possess on his premises a capacious drying-room—an object which in many places might be readily introduced by the mere introduction of a flue into buildings

already in his possession. We are still more convinced of the practical application and value of the hay-barn, which has been so strenuously advocated by Mr. Little, of Carsgill, in Dumfriesshire (Trans. High. Soc., vol. viii., p. 759), who is of opinion that "if landlords were sufficiently alive to the value of the hay-barn, we should have one on every steading as certainly as the stable and cowhouse." The practice of the Middlesex haymakers more nearly carries out the true theory of haymaking than perhaps that of any other part of England. The whole process is given in my "Farmers' Encyclopædia." The chief object which is kept in view by these farmers is, "to preserve the colour and natural juices of the herbage, which is best done by continually turning it, so as never to expose the same surface for any length of time to the direct influence of the sun. Before it has lain long enough to become yellow, particular care is taken to turn the swaths, and to protect as much as possible the grass against rain and dew by cocking.

Practice and science, then, both concur in the correctness of certain principles of haymaking; and yet that these are, in many districts, very little regarded, is unfortunately too true. To the enlightened farmers of England I need offer no apology for thus endeavouring, in the case of haymaking, to make the labours of the farmer and the chemical philosopher mutually illustrate each other's great objects and labours. It must ever, indeed, be of considerable value to the cultivator to understand the science of any operation—the principles on which it is founded, and the most practically useful objects, which, in accordance with a knowledge of those truths, he should ever be striving to attain.

HARLESTON FARMERS' CLUB.—At a Meeting of the Harleston Farmers' Club held at the Magpie Inn, on the 14th inst., present—Messrs. Mechi, Theobold Gower, Woodward, Nunn, and a very crowded company of agriculturists, the subject of "Agricultural Education" was introduced by Mr. R. B. Harvey, when the following resolution was carried unanimously:—"It is the opinion of this meeting that an improvement in the system of agricultural education generally, is of the utmost importance. It believes that a better understanding of the principles of the tenure and management of land is required by the owners of the soil; that with the improvements in science which the last few years have effected, a knowledge of those connected with agriculture will be indispensable on the part of the rising generation of the occupiers of land; and above all, that the more knowledge a labouring man possesses the happier he will be and the more skilful and handy he becomes. With these views it recommends to every one connected with the soil, and to the members of this club especially, that they should promote by all the means in their power an improvement in the system of Agricultural Education."—Francis Dix, Secretary.

DRAINAGE OF LAND.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—Though I am sensible gratuitous advice, like proffered services, is commonly viewed with suspicion, yet, since it has been my province to bring into notice a scheme of drainage on hydraulic and pneumatic principles, with permission I beg to give a brief sketch of my *modus operandi*.

In addition to uniform parallel drains in the direction of the most fall, more immediately for collecting and discharging water, I confidently continue to recommend, after long and successful practical experience, as being essential, an air drain, resembling the underground outfall in area, and, like it, having *guarded* openings at each end, to connect the *upper ends* of all such parallel or minor drains; by this means unhealthy exhausted air is speedily displaced by a perpetual current of fertile atmospheric air through the drains and through the cracks in the ground caused by its shrinking; the fissures in the subsoil are thereby multiplied to an indefinite extent, the decomposition of inert vegetable and mineral substances is promoted, and atmospheric air and rain-water obtain a more free passage to the roots of plants and to the drains—air alone contributing at times, to the former, moisture and nourishment, and operating as a safety-valve against injury arising from droughty as well as from rainy seasons. In short, to the combined influence of atmospheric air, rain-water, and vegetable remains, the *natural* superiority of surface soils over subsoils is *solely* to be attributed. By this circulation of air, the bottom of the drains and the ground *below* are relieved of excessive moisture by systematic, *not* surface evaporation; *after* drainage by gravitation ceases, and stones or tiles become less liable to sink. This air drain also, in effect, shortens minor drains, arrests the progress of water issuing from higher lands, and serves such lands—if needed—in the capacity of an outfall-drain; but in such a case it should always be made *straight*, and deeper than the minor drains *below* it, so that an air communication only may exist between them.

The practical advantages arising from the above method may be satisfactorily tested at a trifling expense, especially where a field is already underdrained, by admitting a current of air through the drains of one part thereof, and comparing its effects with the remainder; and it would be well for the information of the agricultural community that results should be notified.

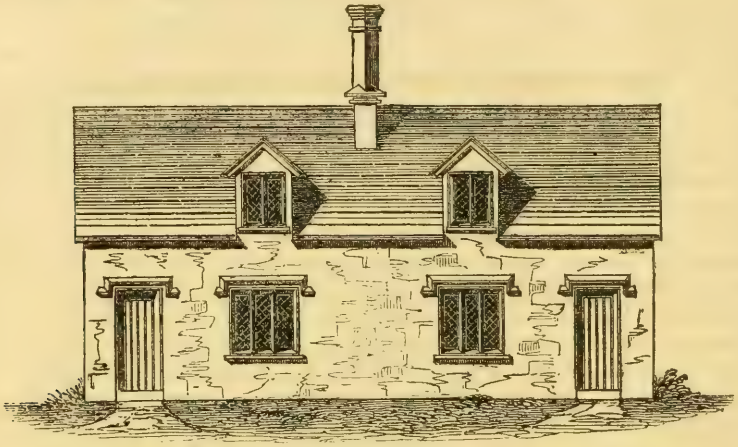
I am, &c.,

SIMON HUTCHINSON.

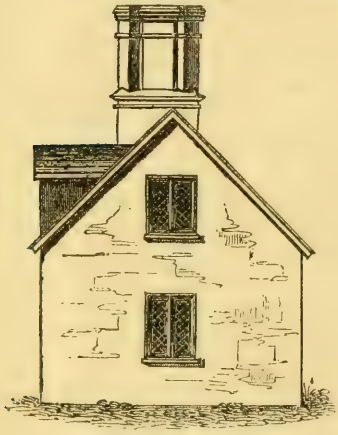
Manthorpe Lodge, Grantham, June.

AGRICULTURAL LABOURERS' COTTAGES.

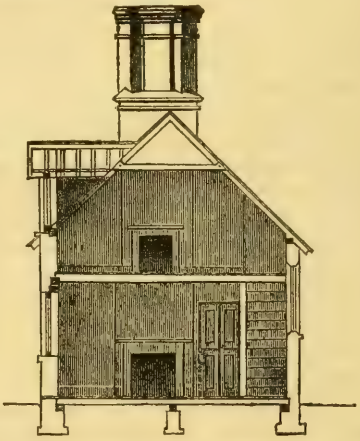
With the view of aiding the excellent objects of the Society for Improving the Condition of the Labouring Classes, we give an illustrated plan for a pair of cottages for agricultural districts, issued by the society; from the design of their honorary architect, Mr. H. Roberts, F.S.A.



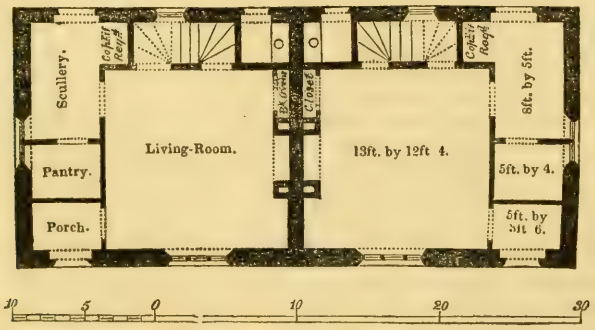
FRONT ELEVATION.



END ELEVATION.

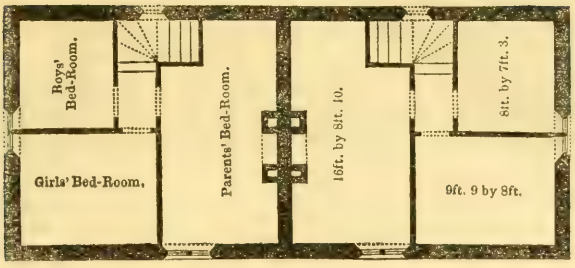


SECTION.



GROUND FLOOR PLAN.

In this plan the ground-floor provides a living-room, entered through an internal porch or lobby; a small wash-house or scullery; a pantry: with a store for coals under the staircase, and other conveniences.



UPPER FLOOR PLAN.

The upper-floor, which is partly in the roof, provides three bed-rooms, varying in size, and one of them with a fire-place.

The cost of such a pair of cottages, built in a substantial manner, either in the country or in the neighbourhood of London, must depend on the price of bricks and other materials, the expense of labour and cartage, and other varying circumstances.

The committee recommend that, where practicable, the front of these cottages should have somewhat of a southern aspect, and that particular attention be paid to securing a *dry foundation;* and where this is not otherwise obtainable, artificial means should be adopted, by forming a substratum of concrete, about twelve inches thick, or by bedding slate in cement through the whole thickness of the wall under the floor-level; or asphalte may be used for the same purpose.

The ground-floor should be raised not less than six inches above the external surface; and, where wood floors are used, they should be ventilated by means of air-bricks built in the external walls.

For the external walls, brick—being usually less porous—is preferable to stone; unless the latter be rough-cast. And with a view to securing a perfectly dry habitation, the external walls to the living-rooms should be built hollow, twelve inches thick, with stretchers laid flat, having a space of three inches between them; and the headers twelve inches deep, bonding through the wall, or nine inches deep with a three-inch closer.

Hollow bricks have been recently introduced for cottage walls with good effect; and in some parts of the country concrete walls, twelve inches thick, have been adopted, as the committee are informed, with satisfactory results, and considerable saving of expense.

The roof may be covered with slate or plain tiles.

The partitions on the upper floor should be framed an inch and a-half thick; and the same to those on the ground-floor between the scullery, pantry, and living-room. The remaining partitions on the ground-floor to be bricknogged.

The windows to have chamfered wood frames, with strong zinc or cast-iron casements. The shutters to the front ground-floor windows may be conveniently arranged to answer the purpose of a table, by hingeing them at the bottom to fall into a recess; the support being formed with two moveable bars, hinged at the back of the shutter.

The flue from a small copper may be carried up in the back external wall; and, where brick ovens are required, they should be built as shown, by the side of the kitchen fire-place, the closets being formed on the opposite side.

For efficient ventilation, an air-flue, nine inches by four and a-half, should be carried up in the jamb of the ground-floor chimney, towards the window, commencing under the floor-level, and passing into the flue from the bed-room chimney; an opening being formed into it immediately under the ceiling of the living-room, filled in with a plate of perforated zinc. The bed-room over the living-room may be aired and warmed by a pipe, two inches diameter, passing through this flue from the side of the fire-place on the ground-floor, and opening into the bed-room above; or a distinct flue may be carried up for this purpose on the opposite side of the fire-place. The bed-rooms without a fire-place should have an aperture in the partition over the door, filled in with a perforated zinc ventilator.

Lithographed working drawings, with a specification for these cottages, have been prepared, and may be had of the secretary to the society, Mr. Wood, No. 21, Exeter Hall.

A pair of cottages upon this plan has been built by Mr. J. L. Ostler, of Grantham, at a cost, by contract, of £140; the price of the bricks being 30s. per thousand. These cottages are situated at Gonerby, about one mile from Grantham. The builder, Mr. George Duns, of the same place, has completed his contract in the most satisfactory manner. The window-lights are of cast zinc, obtained at Birmingham at 7s. 6d. each. The doors, window-jambs, and lables over the windows and doors, are of stone; which gives the exterior of the

cottages a very neat effect. The flues in the chimneys cross each other, to prevent smoking. There are zinc gutter-pipes back and front; and there is a boiler-range in the living-room.

Mr. Martin, the society's agent, has inspected these cottages, and reported as above. The builder is prepared to repeat the contract in any part of the country, on condition of being allowed the extra cost and carriage of materials, according to the district, compared with Grantham. Mr. Ostler intends letting the above cottages, with thirty poles of garden-ground attached, at £4 per annum each.

RESEARCHES ON THE VARIOUS SOURCES OF PHOSPHORIC ACID FOR AGRICULTURAL PURPOSES; AND ON ITS PRESENCE IN DIFFERENT GEOLOGICAL STRATA.

By J. C. Nesbit, Esq., F.G.S., M.C.S.L., of the Chemical and Agricultural School, Kennington, near London.

Part II.

The first part of this paper treated at some length on the phosphatic substances found in the tertiary formation; and in continuation, we have now to investigate, and show the presence of phosphoric acid in the upper and lower chalk, and chalk marl; and in the upper green sand, which lies immediately beneath.

THE CHALK.

The next formation in the descending series below the tertiary is the chalk.

This vast deposit of calcareous matter is proved by its numerous fossils to be of marine origin. It abounds in the remains of the ammonite, nautilus, fish, crustacea, corals and other zoophites, &c. Scarcely a particle of chalk, when examined by a microscope, can be found which does not contain some animal remains. The flints themselves even exhibit, on examination, numerous traces of their organic origin. The whole was in a primeval period of the earth deposited at the bottom of a profound and tranquil ocean. From the abundance of these animal remains it might have been inferred that phosphoric acid existed in the chalk, and an examination proves its presence in small quantity through the general mass.

The chalk is divided by geologists into the upper chalk, the lower chalk, and the chalk marl.

The upper chalk in the south of England is generally known by its parallel bands of flint, the lower chalk being destitute of them. This condition is, however, in some northern localities just reversed. On reference to the geological map the general line of the chalk (coloured yellow) may easily be seen at a glance.

From the subjoined analyses it appears that the lower chalk contains less phosphoric acid than the upper, which is, perhaps, contrary to what might have been supposed. A much more extended series of experiments, however, would be required to prove this as a general fact:—

Phosphoric Acid in Upper and Lower Chalk.

	Insoluble Siliceous Matter pr.cent.	Phos. Acid pr.cent.	Phos. Lime pr.cent.	Analysts.
125. Upper chalk, Blue Bell Hill, near Chatham	1.9	0.41	0.85	C. Agate
126. Do. do. ...	1.7	0.48	0.98	W. Reeve
123. Lower chalk, Thornham Church, near Maidstone	7.0	0.19	0.39	E. Agate
124. Do. do. ...	5.5	0.34	0.70	W. Reeve

The chalk marl, which lies below the lower chalk, and generally rests on the upper green sand, is a rich, fat, unctuous soil, of very great fertility, often producing in succession immense crops of wheat and beans, even without manure. In wet weather, however, it is almost impossible to work it; but the art of the drainer would probably, in some measure, obviate this, as very few attempts have yet been made to lay this kind of land dry. When used as marl its effects are excellent, and may often be seen for years after its application. This soil is largely developed in the neighbourhood of Farnham, in Surrey; Alton, in Hampshire; and in several places in Wiltshire and Dorsetshire; and near Lewes, in Sussex. It has not yet been observed in large quantities in Kent.

It is sometimes very difficult to distinguish this marl from some of those of the upper green sand, which generally lie in close proximity. The chalk marl, however, contains less silica, and by the action of water is washed wholly away like fuller's earth, without leaving behind those stony phosphoric substances observed in the green marls. Sometimes, however, the different kinds of marls have, by denudation or otherwise, mingled completely together, with greater or less predominance of the one or the other. These, therefore, form a kind of intermediate marls.

Phosphoric acid exists in these marls comparatively in very remarkable quantities, and in a great measure this accounts for their great fertility. It is, however, extremely probable, that in addition to this substance, they contain potash and soda in very valuable quantities. It will be seen from the following table that on the average, 1,500 tons of chalk marl are equal in phosphoric value to 100 tons of bones.

Phosphoric Acid in Chalk Marl.

	Insoluble Siliceous Matter pr.cent.	Phos. Acid pr.cent.	Phos. Lime pr.cent.	Analysts.
82. Chalk marl, Farnham, Surrey ...	18.60	1.99	4.08	E. Cottingham
88. Do. do. ...	19.00	0.79	1.63	W. Reeve
120. Do. do. ...	18.80	1.68	3.45	F. Lean

The presence in the chalk of nodular masses containing phosphate of lime, as mentioned before, was noticed by Berthier, at Cap La Hêve, near Havre. These nodules, according to his analysis, contain 25.7 per cent. of phosphoric acid. In many places, also, the coproliths of certain fish are found in the chalk; but nowhere in this country have either they or the nodules been found in quantities sufficient for the purposes of agriculture. A pretty close investigation of the chalk in the neighbourhood of St. Catharine's Down, in the Isle of Wight, failed to discover any nodular masses *in situ*, though one was found on the beach below the Down. The annexed table shows the phosphoric acid in some specimens examined:—

Phosphoric Acid in Chalk Specimens.

	Insoluble Siliceous Matter pr.cent.	Pho. Acid. pr.cent.	Phos. Lime pr.cent.	Analysts.
158. Coprolith from the chalk	not determined	26.92	55.25	J. Bailey
145. Nodule, lower chalk St. Catherine's Down	6.00	19.00	39.00	L. Cottingham
Substance attached to nodule.....	29.00	6.96	14.39	Do.
185. Spongite, Blanc Nez, near Calais	12.66	0.29	0.60	W. Reeve

THE UPPER AND LOWER GREEN SAND AND GAULT.

Below the chalk, and generally resting on the freshwater wealden formation, lie those remarkable marine deposits known in England as the green sands and gault, and in France as part of the "Systeme Néocomien." The colour of certain portions of these sands is owing to the presence of green particles of silicate of iron. In many portions, however, of the lower green sand the soils and rocks are coloured rust-red from the presence of large quantities of peroxide of iron. The persistency of the gault clay as a boundary between the upper and lower green sand over large districts of country is a remarkable fact, and one which, as Dr. Fitton observes, stamps it with particular importance. These three series of strata are generally found associated together below the escarpment of the chalk. On reference to the geological map these strata (coloured green) may be traced together from the sea at Folkestone, in Kent, through Ashford, Maidstone, Wrotham, Seven Oaks, Reigate, Guildford, Farnham, Alton, Selborne, Greatham, Petersfield, Steyning, north of Brighton, Lewes, and entering the sea again east of Beachy Head. They are found also abundantly, west of the chalk hills which range from Dorsetshire to Norfolk, south of the chalk downs of the Isle of Wight, and also in some places west of the Lincolnshire and Yorkshire Wolds. They are very irregularly and unequally developed. In some places, as at Alton, the upper green sand alone is several miles in breadth; whilst in others, as near Guildford, the upper green sand and gault together are not more than a few yards in width.

In many parts of England where the weald is absent the lower green sand is found resting on the Kimmeridge Clay, Coral rag, or some other member of the Oolite deposits.

In entering into the details of the experiments made on the fossils of these strata it will be convenient to give them a separate consideration, though very often at their junctions it is difficult to distinguish where the one begins or the other ends.

THE UPPER GREEN SAND FORMATION.

This deposit is in general distinguished by remarkable fertility, and constitutes some of the finest land in the vicinities of Farnham, Alton, Selborne, and Petersfield, and many other places. The application of bones produces no apparent effect on these soils, and this circumstance it was which induced me to commence, some years ago, the collection of marls, &c., of this formation, for the purpose of analysis. Near Farnham and Alton marls are found which in former times were much used by the farmers, as is evinced by the immense pits now remaining from which millions of tons have evidently been dug.

Gilbert White, in his "History of Selborne,"* notices the fertilizing properties of the marl, which, he says, is "a sort of rotten or rubble stone, which when turned up to the frost and rain moulders to pieces, and *becomes manure to itself*." Similar marls are found in many other places, as, for instance, at Merstham and Godstone, in Surrey, &c.

FARNHAM MARLS.

In a communication made public in January, 1848, I mentioned the discovery of the presence of phosphoric acid in these marls, and the investigation has subsequently been pursued not only in the marls of Farnham, but also in the soils and rocks of this formation in various other localities. Besides phosphoric acid, these marls contain a notable amount of the alkalies potash and soda. When these marls are subjected to the process of washing, various fossil substances are left behind; as the teeth of sharks, the remains of corals, spongites, the casts of a variety of shells, together with nodular masses and lumps, of various sizes. These nodules and

* History of Selborne, Letter 1.

fossils, on analysis, give evidence of the existence of a large amount of phosphoric acid. Though the fossil substances contain much more phosphoric acid than the general mass of the marl itself, yet from the analyses of a very great number of specimens I am persuaded that the marls contain a considerable proportion of this substance, independent of the nodules and fossils therein contained. None of these marls yet examined have been found to contain less than from 1 to 1½ per cent. of phosphate of lime, and some contain as much as 15 per cent.

The following table contains analyses of green marls from Farnham, and of some of the fossil substances found therein.

Phosphoric Acid in Marls, &c., from Farnham.

		Insoluble Matter per Cent.	Phosphoric Acid per Cent.	Phosphat. of Lime per Cent.	Amnt. = 100 Tons of Bones.	Analysts.
					tons	
83	Green-marl, Farnham....	66.00	2.60	5.35	841	E. Agate.
192	Spongite, from green-marl, Farnham.....	19.30	21.60	44.33	101	E. Lane.
94	Small water-worm mass, Farnham	13.48	26.56	56.80	79	J. C. Nesbit.
198	Small nodule, Farnham ..	not detmd	16.47	33.80	133	G. Whiting.

Whether the fossil beds of the green sand can be worked as a source of phosphoric acid altogether depends upon the thickness of the deposit and the number of the fossils it contains, but the marls themselves can generally be used with advantage on the chalky and sandy soils which are often found in their immediate neighbourhood.

The fossils from the marl beds near Farnham present all the aspect of having suffered removal from their proper beds, and of having been mingled heterogeneously together, by the action of running water. It is, therefore, in other localities which have not been exposed to the action of denudation, as at Farnham, that we must look for these fossils *in situ* and obtain a correct appreciation of their origin.

ST. CATHERINE'S DOWN, ISLE OF WIGHT.

Nowhere does the upper green sand present itself to greater advantage for the purpose of observation than at the south side of the Isle of Wight, from St. Catherine's Down, along the under cliff, to Ventnor and Bonchurch. The upper green sand here rests in place on the gault, and capped by the chalk, forms, facing the sea, romantic cliffs 200 to 300 feet in perpendicular height above the road, which, passing at their foot along the surface of those immense land slips which have for ages been sliding from their insecure foundation on the gault, winds in and out among the huge masses of rock fallen from the adjacent cliffs. These enormous series of fallen masses of green sand, well known as the Under Cliff, extend in length from St. Catherine's Down to Bonchurch, a distance of nearly 10 miles ; and in many places they reach from the foot of the cliffs above mentioned, from which they have fallen, more than a mile in breadth, t : their termination in the sea below. The green-sand cl i are here about 700 feet above the level of the sea, and the chalk which caps them rises gradually for some distance landward until it attains the height of 900 or 1,000 feet above the neighbouring ocean.

The broken land of the Under Cliff abounds with the most picturesque and romantic scenery, continually varying to the eye of the traveller as the tortuous way, emerging from some wooded glen or rising on some slight eminence, discloses beneath the long vista of upper cliffs the torn-up land descending in wild confusion towards the ocean which bounds the horizon.

On ascending the Down near the Black Gang Chine, and approaching the edge of the cliffs, many places are seen where, by the action of rains and violent storms, the lower-chalk marl covering the green sand has been removed, leaving exposed to view the two strata above and below their junction. Immediately beneath the chalk-marl on the extreme verge of the cliff occurs a layer, about four inches in thickness, of greenish hue, abounding in organic remains. It contains quantities of small nodules of various kinds, spongites, the casts of many small species of ammonites, chiefly fragmentary, nautili, echini, terebratula, turrilites, &c., and one or two species of cirrus, thetis, trochus, venus, buccinum, unio, and other shells, together with the teeth of the shark. This layer rests on a bed of more white and chalky appearance, and about eighteen inches in thickness. Below the light chalk bed comes a second layer of organic remains, containing ammonites, nautili, &c., exactly similar to those of the upper one. These beds are very persistent, and, owing to the horizontality and undisturbed state of the strata, they can be traced for miles along the cliffs still holding the same position relatively to the chalk and green sand. Their exact position may easily be seen by reference to the stratigraphical section published with this paper. The juncture is indicated by the letter A. The following wood-cut represents the cast of a turrilite from one of these beds.

CAST OF TURRILITE. UPPER GREEN SAND.

The material composing the nodules and casts of shells, is in some few cases similar to the greenish calcareous sand in which they are imbedded; but the great majority are filled up with a lightish-grey substance, about the specific gravity of 2·5 ; in some instances soft and pulverulent, in others sufficiently hard to resist scratching by copper or iron, but easily touched by steel. On analysis this substance is found to contain from 19 to 24 per cent. of phosphoric acid, together with carbonic and sulphuric acids, silica, alumina, iron, lime, magnesia,

and traces of manganese, fluorine, and organic matter. These casts and nodules, like most others containing phosphoric acid, on repeated blows from a hammer, yield, when in a moist state, a pecular fœtid animal odour. A similar effluvium is given out on solution in acid. The greenish calcareous sand in which the fossils are imbedded contains a certain amount of phosphoric acid, as is likewise the case with all the marls and soils of this particular portion of the upper green sand which has yet been examined. The table annexed exhibits the amount of phosphoric acid in many of these casts as determined by careful analysis :

Phosphoric Acid in Nodules and Casts of Shells, Upper Green Sand, St. Catherine's Down.

		Insol. matter per ct.	Phos. Acid per ct.	Phos. Lime per ct.	Amnt. = to 100 tons of Bones.	Analysts.
					Tons.	
118	Cast of Turrilite	5.00	24.26	49.79	90	E. Agate
130	Cast of ammonite	6.00	21.28	43.68	103	A. Hutley
140	Small spongite nodule	9.60	19.13	39.26	114	A. Hutley
149	Small spongite nodule	17.00	20.20	41.60	108	W. Reeve
160	Cast of ammonite	10.00	23.06	47.32	95	W. Reeve
195	Cast of ammonite	9.60	23.44	48.10	93	L. Cottingham
166	Cast of turrilite	21.00	17.23	35.36	127	J. Blyth
,,	Green calcareous sand immediately encasing do.	21.00	5.38	11.05	409	J. Blyth
197	Small nodule....	4.40	20.07	41.60	108	E. Lane
151	Green sand, or hassock, in which the fossils occur	26.50	1.23	2.53	1778	E. Cottingham

Immediately beneath the lower stratum of fossils comes a bed of soft greenish rock, easily broken up by the pick, and containing the remains of very large ammonites and nautili, some of the former being at least two feet in diameter. These casts of shells seem to be made of the same material as the soft rock itself, and not to contain a greater amount of phosphoric acid than it is found to contain—namely, from one to two per cent.

This soft green rock, which is about three or four feet in thickness, rests on a stratum, about a foot in thickness, of large, irregular, nodular masses, many of which have the appearance of large fossil sponges, or corals. They are brown or grey in colour, crystalline in texture, and emit a disagreeable odour when struck by the hammer or dissolved in acids. Many of the masses, when broken, often appear to have tubular vacuities running through them, like the main channels of a sponge, or like some of the hollow spongite flints of the chalk. These tubes are generally filled with a calcareous, green, sandy matter, quite different from the mass of the nodule itself; and the exterior of the nodules is likewise coated with it. The lumps, on analysis, furnish a large amount of carbonic and phosphoric acids, together with silica, alumina, iron, lime, magnesia, sulphuric acid, and traces of fluorine and manganese. The specific gravity is about 2.68. The composition of these masses varies very much, and even the same nodule differs in constitution in different parts. The brown or dark-coloured varieties contain more phosphoric acid than the lighter ones.

The calcareous sandy matter coloured with green particles, which is found attached to the nodules, contains likewise a notable quantity of phosphoric acid.

This large bed of nodules may be traced along the extreme verge of the cliff for some miles, and occupying the same relative position with respect to the ammonite beds above. It will not require a great stretch of the imagination to suppose that these nodular masses have received their phosphoric acid by infiltration from the beds immediately above, which contain such large quantities of animal remains originally deposited *in situ* in deep and tranquil waters. In the following table are given the amounts of phosphoric acid found in some of the nodules.

Phosphoric Acid in large Nodule Bed, St. Catherine's Down.

		Insol. matter per ct.	Phos. Acid per ct.	Phos. Lime per ct.	Amnt. = to 100 tons of Bones.	Analysts.
					Tons.	
133	Large nodule ..	notdetermined.	13.81	28.34	158	E. Agate
137	Large nodule, portion near exterior	17.00	7.98	16.38	274	L. Cottingham
,,	Do., portion from interior	18.00	7.85	16.12	274	L. Cottingham
154	Large nodule, interior.....	6.00	10.86	22.29	201	E. Lane
,,	Do., nr. exterior	12.90	9.56	19.63	229	E. Lane
146	Large nodule, nr exterior	7.00	7.72	15.86	283	E. Cottingham
,,	Calcareous green sandy coating of nodule	50.00	9.44	19.37	230	E. Cottingham
196	Large nodule....	7.00	11.65	22.92	200	E. Lane
141	Large nodule....	22.00	16.60	34.06	132	E. Lane
152	Large nodule, interior	13.00	14.82	30.42	148	J. Blyth
	Do., nr. exterior	6.70	9.18	18.85	232	J. Blyth

Below the large layer of irregular nodules last-mentioned, occur several others, which appear to consist chiefly of calcareous matter, with small quantities of phosphoric acid. Phosphoric acid, indeed, seems to pervade more or less the whole of the upper green sand from the chalk to the gault. The malm and building rock, which occur below the larger nodules, are full of small dark brown, grey or black lumps, which, where the stone has been at all weathered, stands out prominently from its surface. These lumps, which contain from ten to twenty per cent. of phosphoric acid, occur even in the hard siliceous chalcedonic rocks so continually found in this formation. The nodules, casts of shells, &c., occur at St. Catherine's Down in sufficient quantities for the purposes of commerce, and it is my intention to treat of their manufacture when I arrive at that portion of this paper which discusses the general composition of these bodies.

The upper green sand and chalk marl are very largely developed in different parts of the continent of Europe, and they appear much to resemble the same formations in this country in respect to the locality of their fossils M. Rozet,* in speaking of the chalk marl and green sand of the vicinities of Calais and Boulogne, says,

* Description Geognostique du Bassin du Bas Boulonnais, par M. Rozet, 1828, page 41. "C'est au passage de la craie marneuse à la craie verte que les fossils sont les plus communs."

"that the fossils are most abundant where the chalk marl passes into the green sand." Now as the great mass of phosphatic nodules in these formations in England are found just at this juncture, there seems every probability that upon examination the French fossils and nodules will be found of a similar chemical composition to those of this country, and they will most likely be found in equal abundance. We have already indicated the various localities in England where these fossil substances may probably be found, and there will perhaps be no necessity to urge the landowners and the farmers of these districts to undertake a careful investigation of their respective vicinities for the purpose of finding those mineral treasures; and of having the opinion of the chemist on the value of the substances found. In order to further these inquiries, I shall be happy, gratuitously, to give my opinion as to the presence of phosphoric acid in any specimen submitted to me by gentlemen engaged in practically investigating this subject.

The next paper will contain the results of the analyses of the fossils of the gault.

ON THE EXTENSIVE EXISTENCE OF PHOSPHORIC FOSSILS IN THE GREEN SAND FORMATION.

BY A. GYDE, ESQ., M.R.C.S.E.

Four years have now elapsed since Baron Liebig pointed out the advantages that must accrue to English agriculture by the use of those fossil remains of our antediluvian world which chemical geology had discovered; concluding his observations on this subject by stating that "in the remains of an extinct animal world England is to find the means of increasing her wealth in agricultural produce, as she has already found the great support of her manufacturing industry in fossil fuel."

But the subject appeared to excite little or no interest until Mr. Paine, of Farnham, called the attention of agriculturists to the subject, from having discovered on a part of his estate certain strata containing fossils, which, on analysis, were found to be peculiarly rich in phosphate of lime. The result of the analyses of the phosphoric fossils are given by Mr. Paine in the "Agricultural Gazette" of Feb. 19, and also in an interesting paper by C. Johnson, Esq., in the last number of this Journal.

The statements of Mr. Paine stimulated geologists and agriculturists to examine other localities in England holding a similar geological position; and from analyses of fossils taken from several parts of the green sand formation, there is not the slightest reason to doubt that the statement of Liebig may be fully realized, and that the agriculturists of England may find in these fossils a source of phosphate of lime, which, by judicious management and a little chemical skill, may be rendered a cheap and efficient substitute for bones or guano.

These phosphoric fossils are to be found in several of the geological formations of this kingdom. A bed, six inches thick, composed of coproliths, with fossil bones, extends, as a brown stripe, through the limestone rock on the banks of the Severn for four miles in extent. The lias near Bath, Eastern and Broadway Hill near Evesham, and the lias marl of Lyme Regis, contain nearly one-fourth part of fossil bones and animal remains, which, on analysis, yielded 18 per cent. of bone earth; but it is to the green sand formation that we have to look for an abundant supply of fossil organic remains, remarkably rich in phosphate of lime.

Of the three divisions of the green sand formation, the gault appears to yield the richest supply of phosphates; the fossils from this stratum often containing as much as 70 per cent. of bone earth; while the nodules* which exist in the same formation, and are often associated with the fossils, yield from 40 to 50 per cent. of phosphate of lime. Some nodules taken from the gault at Folkestone, sent me for examination, were of a grey colour and compact texture, and gave, on analysis, the following composition in 100 parts:—

Silex and siliceous sand	41·0
Organic matter	1·1
Carbonate of lime and magnesia ..	3·1
Phosphate of lime.....	43·6
Moisture.....	4·0
Oxide of iron, alumina, and loss..	7·2
	100·0

Specimens of fossils and nodules taken from the upper green sand, from three localities, when analyzed, indicated a variable proportion of phosphates, with carbonate of lime, silex, alumina, and iron. The phosphates and carbonates existed in the following proportions in 100 parts:—

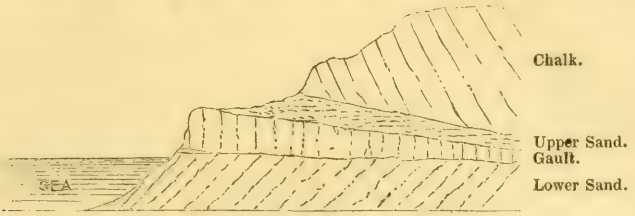
	Phosphates.	Carbonates.
Nodules.....	64·5	5·2
Fossils	70·0	2·0
Fossils	34·2	2·5

Several specimens from different localities on the lower green sand formation, when examined, gave less phosphate of lime than those from the upper green sand or gault, and would indicate a decreasing proportion of phosphates as we proceed downwards, the per-centage of phosphates falling to about 20 per cent., but on further examination this may be found to be below the real value.

These fossils and nodules may be found more or less abundant along the whole range of the green sand formation. In the south-east of England the strata may be seen rising in succession in Sussex, on the north of the South Downs; while on the coast of Kent the same group emerges from beneath the chalk on the south side of the North Downs. The relative position of these beds is well seen at Copt point near Folkestone, the gault constituting

* These nodules are supposed by some geologists to be coprolithic, while others hold a contrary opinion.

the immediate face of the cliff, and reposing on the lower green sand; and this place and East Bay are celebrated for the abundance of gault fossils which are constantly being washed out of the marl by the action of the sea. The following section of Eastware Bay will illustrate the relative position of the strata



This formation will be found extending from Flamborough Head in Yorkshire to Sidmouth in Devonshire; appearing again in the Isle of Wight, where the fossils are very abundant. In the north-east of Ireland this formation constitutes an important feature, and might be worked with considerable advantage. On the continent we again find it accompanying the lower members of the chalk formation; and it is well displayed in Saxony and along the Alps and Carpathian mountains. In North America these strata appear to be the equivalent of the chalk of Europe, for they abound in the usual cretaceous fossils, as ammonites, nautili, hamites, scaphites, belemites, &c.

Painswick.

CULTURE OF THE TURNIP AND ITS CONGENERS.

BY J. TOWERS, MEMBER R.A.S., H.S. OF LONDON.

A paper, apparently of great merit, has just come under notice, which demands so much serious attention, that I have resolved to venture upon its analysis, and to lay the results before the readers of the *Farmer's Magazine*.

The author, Mr. Moffatt, first attempts to draw a comparison between the "Swedish" and common white turnip, as respects the organic constituents of each, under the admitted consideration that "both the organic and mineral constituents of all plants are found to vary in regard to their relative proportions, according to the abundance or deficiency of the various matters afforded by the soil or manures from which they are produced." Thus, the Swede contains—

		The White Turnip.
Starch	9·0	7·0
Gum and sugar	51·0	34·0
Albumen	2·0	1·0
Fatty matter	2·6	1·5
Totals	64·6	43·5

Mr. Moffatt notices particularly the superiority of the Swedish turnip over the white in its super-abundance of the nutritive principles; one thousand pounds of the swede containing nineteen pounds of starch, gum, and sugar, more than the same quantity of the white turnip, besides one pound of albumen and one-tenth of fatty matter. But what I would fain ascertain, as a matter of reat moment, is the amount of nutritive constituents in the turnip-cabbage (kohl rabi). It is a plant so strong in temperament, so free from disease or insect, and so easy and sure of culture, that nothing but a defect in its feeding quality ought to prevent its universal introduction. I have never seen it fail anywhere, even at a time when turnips could not grow at all; and at others when they were riddled as it were into honey-coombs by the larva or underground caterpillar of the Ægrotus.

Having witnessed its complete success on several farm-establishments about Croydon, I made it, on more than one occasion, the subject of eulogium, and hope, ere long, to discover that this solid, heavy, compact, and juicy bulb may do more than compete, chemically, with any of its congeners in the turnip farms.

At our July fair, held in "The Fairfield," I saw the pens of sheep—poor-looking scare-crows numbers of the poor animals appeared to be—from which Mr. Davis purchased a number of French sheep, which he fed for months upon kohl. In No. 25 of his Essays we read—"They have done well, and have made the sweetest mutton I have ever tasted. This root seems to me much preferable to swedes or any other turnip, for its goodness as well as certainty."

In 1837, when the grub so ravaged Berks, Buckingham, and thence eastward into Essex, as to induce societies to offer a premium for a remedy, I know that, at Great Missenden the kohl was found of great use for sheep, and that no grub could touch it: I then communicated the circumstance to the farmers. Whatever, in fair turnip farms, the land may require as appropriate manure, the kohl has the best chance of success; but as the phosphate of lime is of all other agents the one most suitable, we have to consider under what form that salt of lime should be applied. Bone-dust, with or without farm-yard dung, has been resorted to; then bones broken up by sulphuric acids, and finally charred vegetable matter; but these applications will not furnish all the elements of the bulb to render it entirely available to the grazier and farmer of live stock.

Guano was introduced; and when good of its kind, pure, and unadulterated, it was found to comprise all the constituents of vegetable aliment. Many eminent chemists subjected it to rigid analyses; but, from whatever cause or causes, it always happened that the results came out differently:

still, the comprehensiveness of the manure was proved, as a general fact, by all. My own analysis occupied a period of more than three months; and these proved that the best specimens contained soluble salts to the extent of 30 per cent., consisting generally of phosphates, sulphates, and muriates of ammonia, of potassa, and of soda, with some urea; the 70 insoluble parts remaining discovered, 1st, a large but varying per-centage of phosphate of lime, in the minutest state of division; 2nd, another of pure uric acid, and a quantity of organic matter destructible by fire, and capable of yielding some ammonia under peculiar treatment. With these undoubted facts before us, we have only to regret the enormous cost incurred by the purchase of an article which, in itself, varies in every parcel, and is exposed to the most abominable degradation by the intermixture of worthless substances. Guano, even of the highest character, is defective in organic constituents; it lacks *substance*, and therefore should always be employed to strengthen, and add chemical force to decomposed farm-yard and fold manure.

We are now prepared to examine the following table and remarks furnished by Mr. Moffatt, which I thus condense:—

By manure rich in phosphates, but not so in alkalies, turnips produced from it would contain an unusual proportion of albumen, but be deficient in starch, gum, and sugar; hence, they would tend to form muscular flesh; while, on the contrary, those manures which are deficient of phosphates but replete with alkalies, would produce turnips abounding with starch, gum, and sugar, and induce the formation and laying-on of fat. The organic composition of Swedish turnips, grown upon farm-yard dung and upon guano, is found to differ considerably, as this table will show; thus, 100 lbs. of swedes contain, when grown upon

	Dung.	Guano.
Of Water	80·02	87·93
Oil or fat	0·25	0·16
Gum	0·27	0·19
Sugar.....	5·37	1·64
Pectic acid and albumen.	1·20	0·71
Metapectic acid.....	3·00	6·77
Cellular fibre	1·22	1·81
Saline matter.....	0·68	0·70

There is a great per-centage of loss in table No. 1, chiefly in the water, but it is in no way made up. The metapectic acid is, I am free to confess, a stranger to me; a new term, that may ere long pass into oblivion; and at all events, though Mr. Moffatt believes "that the plants produced from the farm-yard manure exhibit a decided superiority over those grown from guano, as regards their feeding qualities," we are constrained to doubt, inasmuch as none of the recent analyses are strictly in accordance.

One fact appears to be confirmed; it is this: The ground—its natural constituents, and the changes or additions made to it by artificial enrichment, governs and decides the growth of the plant. We have been of late led to infer that the *foliage* is the chief agent of nutrition. That it is a primary vital organization—one as vital in its functions as are the lungs of animals—I am prepared to admit; but let the ground become parched, let water be entirely withheld, and then let us decide. Nature will do it for us; the plants will cease to grow, they will then flag, and finally wither. Nothing that man can do, in garden, field, or with the plant cultivated in pots, if ground water be absent, will supply the defect. There may be some natural exceptions, as in the case of aërides, &c., but none such exist among the vegetable products of our tillage.

Mr. Moffatt seems to adopt a middle opinion; for he says—"With regard to the elements of which these nutritive principles consist" (referring to the table as above given), "they are composed of oxygen, hydrogen, nitrogen, and carbon, with a little saline matter. These bodies exist in great abundance in water and the atmosphere, with the exception of the latter; and one of the powers with which nature has gifted the vegetable kingdom is that of absorbing and assimilating, by means of other causes, from the atmosphere, those gases which, along with others derived from the decomposition of water, contribute to build up the chief part of their organic structure; the turnip being a plant rendered by nature capable to discharge this function to a great extent by means of its large system of leaves." He conceives that the leaves alone collect from the air so much ammonia and carbon as they require; while the oxygen and hydrogen (as water) are furnished by showers, but that no appreciable quantity of mineral substances can ever be derived from such source. Hence, in choosing manures, we need not be so particular to supply organic decomposable manures to the turnip as those which are replete with the mineral constituents of plants. But at the same time, "the presence of manure capable of supplying abundance of ammonia to the roots of the turnip will, in certain stages of the plant, cause a more vigorous growth, and a greater development of those organs whose office it is to collect such matters from the atmosphere, and even increase the supplies from that source." I must not enlarge in the quotations, as space is not given to complete this subject, which will therefore be resumed in August. Suffice it to say, that Liebig's theory of the absorption of carbonic acid, yielded by the processes of fermentation within the ground to the atmosphere above, cannot be otherwise than hypothetical. The leaves may or may not absorb: experiments under glasses made upon mutilated sprigs or single leaves are unnatural, and go for nothing. But that leaves *transpire* there can be no doubt; their organization, their oscular or porous system, and the actual condensation of water from transfused vapour, all prove the fact. As to ammonia, we are told that it exists in the air—and so it does; but, in common with the aërial carbonic acid (another constituent of air), it is soluble in water, and both are conveyed by showers into the earth. If the absorbent powers of the leaf be a subject of hesitation, those of the roots admit of no question. Manures are applied to soils; they perform their offices, and plants are nourished. The experience of all time is decisive on this point; and we are equally certain that, unless manures and water be seasonably supplied, and in proportions adequate to the wants of plants, vegetation cannot proceed with vigour, or furnish a supply commensurate with the wants of animals or of man.

Croydon, June 8.

THE LONDON FARMERS' CLUB.—MONTHLY DISCUSSION.

The usual monthly meeting for discussion took place on Monday evening, June 5, at the Club Room, Bridge-street, Blackfriars. The Chairman, Mr. Shaw, of the Strand, presided. Mr. Aitcheson had undertaken to introduce the following question for discussion—"What steps can and ought to be taken to Improve the Moral and Social Condition of the Agricultural Labourers?"

As soon as the Chairman had taken his seat,

Mr. BENNETT rose, and said: Sir, If it be—as it would appear to be—absolutely necessary for many gentlemen to return home the same evening, I think it important that our discussions should terminate within such a reasonable time as to enable them to leave after the termination of the proceedings. At the last meeting, what I consider a rather unfortunate resolution was passed when a large portion of the company had left the room; and which, I believe, never would have passed if the bulk of the members had been present. I make this observation without intending to give offence to any one. If, however, many gentlemen are so situated that after having heard a considerable portion of the discussion, they are obliged to leave, and if resolutions may be subsequently carried which are opposed to the feelings of the great majority of the parties who have attended, I think such a state of things requires a remedy. I must confess that I felt surprised on reading the resolution which was carried on the last occasion—a resolution which I believe to be diametrically opposed to the feelings of the great bulk of the gentlemen who heard the discussion; and if any means can be adopted to prevent such an occurrence in future, I think it most desirable, for the sake of the Club.

Mr. LATTIMORE: I must say that I think the gentleman who has made the observations we have just heard has passed an insult on the judgment of those present; for he says the resolution was contrary to their convictions.

Mr. BENNETT: I spoke of the bulk of those who had been present.

Mr. LATTIMORE: Well, I repeat that the remark does not appear to me very complimentary to those who attended; and whatever may be said as to the abstraction of some by railway, it is my belief that the majority of those who had been present were in favour of the resolution which was carried.

The CHAIRMAN said: I quite concur in the observations made by Mr. Bennett, in reference to the desirableness of our making some arrangement to prevent such consequences as that to which he has adverted. I will not enter into a consideration of what took place at the last meeting, because by so doing I should be unprofitably occupying your time, and raising a question which it would be unpleasant to all parties to determine. Suffice it to say that there are members of the Club besides Mr. Bennett who have observed an evil; and my own opinion is that the only way of correcting that evil is to refer the matter to the committee; in order that they may see what means can be adopted to prevent its recurrence. Without entering into what took place on the late occasion, it is clearly possible that if, out of a room-full of people, any half dozen or half score should find it necessary to go away before the conclusion, their opinion being one way or the other, their absence may have a strong influence on the decision of the meeting; and therefore the resolution adopted at the close of such a meeting may or may not represent the real opinions of those who were present during the discussion. I feel perfectly convinced that the members of the committee who are now present will feel it their duty to bring the matter under the consideration of the committee, in order that a remedy may be provided (Hear, hear). Having said thus much on this subject, let me now call your attention to the question appointed for discussion this evening. At these meetings we ought to express ourselves after the manner of those persons who, in speaking of succeeding sessions of Parliament, always speak of the one which is about to take place as the most important that the country has ever seen or heard of (laughter). We are almost always saying that the question now before us is the most momentous one that we have ever been called upon to discuss; but I do say that although we have had some very important questions—although we have had many questions involving not only the interest of the landlord and tenant, but also of the public at large—yet there has been none which so nearly concerns our interest, and should so much call forth our sympathies, as that which is before us to-day; and it is a question which at this peculiar juncture is of deep and peculiar interest. We see strange feelings abroad, not only in this country, but throughout Europe, which have been generated in a great measure, I must say, by the existence of real distress; and we are called upon to use our best exertions to provide, if possible, a remedy for that which leads to such a state of things. There is no question which should command so much of our attention as the question—how may the labour of the country be beneficially employed; and not only beneficially, but satisfactorily employed? inasmuch as we are called upon, as far as we can, to find employment for him who has to "earn his bread by the sweat of his brow." Unfortunately, many are now out of employment; but I hope that in the discussion this evening something will be thrown out which will tend to improve the condition of those who are now placed in so unfortunate a position, and, by its adoption, to afford some better means of employment than they have hitherto possessed (Hear, hear). I feel quite certain that the question will receive at your hands the deepest and most serious consideration. I am equally certain that the gentleman who has undertaken

to introduce it is actuated by motives of philanthropy which we should all desire to cherish; and I am confident that any arguments or statements of opinion which may be advanced by him will be prompted by sincerity of heart, and by a wish to obtain for his fellow-men the advantages which we all desire to obtain for ourselves, of pursuing their vocation so as to obtain from it the greatest amount of benefit (cheers).

Mr. AITCHESON then said—Mr. Chairman and Members of the London Farmers' Club, the subject for our consideration this evening is not one of those which at first sight may arrest the attention or appear of very paramount importance, compared with other subjects which have from time to time been so ably brought before this meeting; but I am willing to believe it is one which will enlist the philanthropist on its side, and may be of much use in drawing the attention of the agricultural body generally to that which I regret to say has been too much overlooked, and also in dispelling many delusive theories which, instead of benefiting the labourer, have been the cause of dissatisfaction between himself and his employer. But whilst proceeding to express my own ideas, I beg to be clearly understood that my object is not to traduce others, and that I do not expect that my own opinions will please all; what I wish to do is to hear the opinions of practical men who are fully competent to assent or dissent from what I may say. Our subject this evening is, to consider what steps can and ought to be taken to improve the moral and social condition of the agricultural labourer. The first and most important matter is certainly education. Apart from the ability to read and write, you will rarely find a very expert workman. By education the labourer's mind becomes expanded, his ideas enlarged, and he can more readily comprehend any little draft or plan you may find it necessary to put into his hands, whether it be drainage, planting, or fencing. I would therefore impress on the minds of my hearers that we ought to do all in our power, by means of parochial and other schools, to forward that great object; but in so doing there are limits to which the extent of education should go in the various grades of life, and I am sorry to say I have heard more than one Assistant Poor-Law Commissioner speak of teaching the children in Union Schools decimal and vulgar fractions, algebra, and geography, and even propose a very expensive class of maps to adorn the school-room walls. This to me appears a species of madness, and we cannot too strongly put down such absurdity in our various parishes. Let us go the length of the "Rule of Three" in arithmetic, and clear and distinct reading the books of the Old and New Testament, leaving to those whose duty it is, more fully to expound and explain them in after life, keeping at all times a watchful and encouraging eye on those who are deserving of commendation, and not being niggardly in rewarding merit wherever it comes before us, not regarding the lowliness of their occupation, but always remembering that each man has his particular station in life allotted to him by a Supreme Power over which we cannot pretend to have any control. By such a course we shall have around us labourers who will be interested in our welfare, feeling and knowing that our interest is one with theirs, and in the hour of need (which I pray God may be long averted) we shall find a population incorruptible and loyal to the institutions of this country, and who will long, as at this moment, be the envy and admiration of the world. The next point I would call your attention to is that of Wages, on which much depends, both as regards bodily comfort and moral conduct; for, unless a labourer can feed and clothe his family, the clergyman may preach and the master may lecture, but neither will fill the hungry belly. I am compelled to say for one, that I have felt ashamed when told that in some localities the weekly wages in winter (for I cannot call them earnings) have been only eight and nine shillings. Taking the rent of the dwelling at 1s. 6d. how can a family subsist on the remainder? It must be starvation. By such means theft, poaching, and ill-feelings are engendered, and the whole moral and social tie dissolved. I do not necessarily imply that the farmers are to blame in this respect, knowing full well that their returns on their capital employed have been too often not only profitless, but attended with great loss. This division of the subject would lead to endless controversy, therefore I will leave it with the humble advice that each occupier of land should as far as possible give to labour its fair price, and he may rest assured that in the end he will not only be a gainer, but have the satisfaction of having done his duty to his fellow men. The next point which presents itself is the comfort and construction of the labourers' dwelling, which is too often neglected, and becomes a fruitful source of demoralization, crowding our unions with natural children, and sowing the seeds of crimes too horrid to contemplate. This may be obviated in every case by a little attention whenever new cottages are to be erected. To this part of the subject I would entreat your earnest attention, particularly that portion of my hearers who may be engaged as agents to estates, while I endeavour to explain the absolute necessity of all cottages having three bedrooms. In the case of the wife's confinement or severe illness, in a dwelling with only two bedrooms, where is the father (who requires his rest) to sleep but in the same room with sons and daughters, in many cases verging on manhood and womanhood? I need scarcely point out the results which follow from such an improper mixture of the sexes. The mind gradually becomes accustomed to such scenes of indecency, and can we wonder at what too often takes place? Who are to blame but those who build such dwellings? And why are they built? In too many cases to effect the paltry saving of 50s. in a partition wall in the first instance, which I should be prepared to show would be the cost were details admissible in the short time allowed for our discussion; but be that the case or not, I would make it a petition to all possessors of cottage property that they would not only correct this evil in future buildings, but not rest satisfied till they have done their duty by altering every cottage on their estates so far as may be necessary to secure the object. I hope soon to see this subject taken up by "The Royal Agricultural Society of England," and a prize given for the best essay on the construction

of labourers' cottages, not as to cost alone, but as to their combining comfort, utility, decency, and neatness. The subject of cottage allotments is one which, in my opinion, was begun with the best intentions, and taken up by many of the heads of the church and the aristocracy, but without understanding the case, as, in trying to benefit the labourer at the expense of his employer, they have lost the very object they had in view, and thereby tended to excite feelings the inverse of those to be desired. I will endeavour as briefly as possible to make myself understood. A landed proprietor appropriates six acres of ground for allotments in quantities of half an acre or a rood, for which he charges £1 per rood, or 30s. in some cases for half an acre; whilst that same land, in the average of the farm from which it was taken, would only let at £1 per acre. I am prepared to show several cases within my knowledge where the rent has been quadrupled. This does away with any good intention on the part of the supposed benefactor, and renders him liable to suspicions of the worst kind. Next, these allotments are sometimes not near the residences of the cottagers, who, being anxious to make the land pay, devote their early mornings and strength to their own profit, coming back to their employers in an already exhausted state, incapable of doing a day's work for the tenant farmer; and again, at night, in the summer season, the same course is pursued. I ask, is this fair or right on the face of it? Why should the one party be to a certain extent deprived of that which he pays for, and the other have the credit of being the poor man's benefactor, when he certainly is not in any sense of the word? But there is a simple cure for all this. Let every cottage have a similar quantity of land attached to it as a garden, and then the desired benefit would be conferred, by not taking the man from his home, or running a chance of his passing a beershop. Let him work at such intervals as he can glean without detriment to his employer. Lastly, whenever a spirit or desire for emigration exists, it is well to foster it by all means within reach. It ought to be encouraged both by tenant and landlord, for certainly a redundant population is one of the serious evils of our country. There is one subject more, intimately connected with the moral welfare of the labourer, on which I would say a few words; but I beg to be understood that, far from wishing to see the Game Laws abolished, I think it would be much to be deplored if noblemen and gentlemen could not enjoy the sports of the field to their fullest extent. Surely hours of enjoyment may be had without "the battue" system, which, instead of increasing sport or healthy exercise, only reduces it to pigeon or sparrow shooting at the Red House, Battersea. I need scarcely say that the inquiry is threefold, where game is preserved to the extent to which it is carried at present. First, the destruction of crops, which is sinful as wasting the food of thousands; next, the laying the foundation of heart-burnings between landlord and tenant; and lastly, the placing temptation before the working man, which he cannot resist. When taken out as a beater the labourer sees pheasants and hares by hundreds rising in every direction, and having witnessed the havoc which they have committed at harvest among the corn, how can we blame him if he is found unlawfully trying to get a share of the spoil? Reduce your game to a moderate compass; where now there are hundreds be content with scores; follow your dogs in a true sportsmanlike manner; reduce your most useless of all appendages to an estate, gamekeepers; set the soil free from poachers; lower the county rate, and leave the labourer without temptation. You will thus set a good moral example, reclaim the poacher by rendering his calling useless, and save many lives which it must be confessed are sacrificed annually for your pleasure. I have thus, gentlemen, in as brief a manner as possible, laid the leading features of the subject before you, and shall leave the matter in your hands, knowing that any omissions on my part will be forgiven, and amply filled up by other speakers.

Mr. R. Baker said—Having taken special interest in this particular question, I hope I shall be excused for rising and addressing a few observations to the meeting with reference to it. I am sure it is a subject which, as our worthy chairman has stated, is in every way of the utmost importance to the country; more especially at this moment, when there is a lack of employment for the labouring man, and it is felt to be the duty alike of government and of individuals to endeavour to find that employment. In the remarks which I shall make, it is my intention to adhere as closely as possible to the literal meaning of the subject as it is worded in the card. I prefer doing this to following Captain Aitcheson in the course of argument which he had adopted in so excellent and able a manner. Well, then, the question on the card is, "What steps can and ought to be taken to improve the moral and social condition of the agricultural labourer?" What steps, I will ask, can and ought we to take? We all know that if any steps at all are necessary, this implies that something must be wrong, and that something else is required as a corrective for that which is wrong. It has been truly said that the knowledge of a disease is half its cure. If we ascertain the disease and its cause, it will be more in our power to apply a remedy than if we knew nothing of the disease, but went to work to apply a cure at random. So with respect to the subject under consideration, that is the reason that in this highly civilized country, and in the present day, steps are necessary to be taken to improve the moral and social condition of the agricultural labourer. Has anything been shown to-night from which we can gather that the moral and social condition of the labourer was better at any antecedent period of our history than it is at present? That, I think, is an essential point to be ascertained before taking up the discussion in the shape in which it is now before us. I will inquire, then, for one moment, whether the moral and social condition of the labourer has been better at any antecedent period? Speaking, as an agriculturist, of the little experience I have had in my time, which extends perhaps over something like 40 years from the period when I first paid workmen, I must say that I believe that the moral and social condition of this class of agricultural labourers who are in regular employment has improved, although by reason of a redundancy of population there

may be an excess of labourers in particular districts. On this occasion I will confine myself to the particular district with which I am acquainted, where there is an excess of labour population over and above the demands of the agriculturists.

Mr. LATTIMORE.—No, no !

Mr. BENNETT.—Yes !

Mr. BAKER.—I beg gentlemen to observe the qualification. I meant to say over and above the demand of the agriculturists at the present moment in one particular district (Hear, hear). A redundancy of labour in the market always has a tendency to depress the mass of labourers and to keep them back, not only those who are unemployed, but also those who are employed, as regards their social condition and the wages which they obtain. Everything depends on the law of supply and demand. Where labour is scarce the labourer is more highly paid than where it is abundant. In the lower parts of Essex, which are the most unhealthy, there is a scarcity of labourers, and labour in those parts is from 15 to 20 per cent. dearer than in those districts of the county where it is plentiful, and that too within a distance of 20 miles, which confirms the general principle which I stated, that labour is depreciated in the market where there is a larger supply of it than is required by the agriculturist. What, then, is the cause of that state of things, and that depreciation ? (" Hear, hear," from Mr. Lattimore). I hold with Mr. Lattimore, who cries "Hear hear," that there is an ample field for all the labour that we have—aye, and for more. But there are two great obstacles to its profitable employment. First, there is not that permanent security for the expenditure of capital in the soil as there ought to be, in order to enable the farmer to employ his capital in labour with advantage ; and, secondly, there is the instability of the corn law. Prices are so uncertain, and profits have so diminished, that labour cannot always be employed to advantage. I hold that with wheat at 45s. per qr., or at the prices of this day in Mark-lane, the cultivator of the soil will not be able to take up the labour and apply it to the soil unless he has his expenses diminished in some way, or the amount of his produce increased (Hear, hear). These, then, I think, are the two great obstacles to the taking up of the abundant or surplus labour. That the tenant may employ this labour, all that is said respecting security of tenure should be carried out by legislative enactment. If I take a farm as tenant-at-will, and have to cultivate it, and embark a large amount of capital in labour on it, with an uncertainty as to ever getting that capital returned, is that the way to take the labour and employ it with advantage ? Undoubtedly not. And I am convinced that if the legislature do not grant security to the tenant, they will, by-and-bye, have to find employment for labour themselves (Hear, hear). Already they have a heavy task on their hands ; and if the present low prices for corn continue, they will have one-third or one-half the agricultural population to provide for in the next twelve-months or two years. Such are the two propositions on which I base my observations. It is necessary now to show how the labourer has been the greatest sufferer in the course of the last ten years. I do not think that during the last forty years the social condition of the best-employed labourers has become worse ; on the contrary, I think it has improved, though I am ready to admit that the social condition of the mass is worse than it was at the commencement of that period. On examining a period of 50 or 100 years ago, we ought to look at the price of labour in comparison with the amount of rents, taxes, rates, tithes, and other outgoings. Why, in one century rents have trebled, tithes have doubled, and taxes have quadrupled, but labour remains where it was. Marshall states that in August 1774 the price of wheat was 48s. the quarter. He says : " I have now ascertained what a labouring man earns in a year. My men very naturally wish to continue at harvest wages (3s. 6d. a day) for another week, instead of 20d." This certainly was very natural on their parts (laughter.) " I have now ascertained what a labouring man's earnings are in a year : 10s. a week for 48 weeks would be £24, the harvest £3 10s., and putting down 50s. for other gettings, the whole amount would be £30 as the wages of the labouring man for the year." Now, how much do his wages exceed that in the present day ? In the year 1795 Vancouver made an accurate survey of the county of Essex ; and in that year it appeared that the rent in the particular part of the county in which I reside was 15s. per acre, tithe composition 3s. 6d., poor's rate 3s. 6d., labour in summer being 9s. 6d. a week, and in winter 9s., and that the prices of provisions were as follows : beef 4½d., mutton 5d., fresh pork 6d., and pickled pork 8d. per lb. ; the produce of wheat was, upon the average, 23 bushels per acre, of barley 34½ bushels, and of oats 35 bushels. Such were the proportions in that part of the county where I reside. Now the present amount of wages per week is from 10s. to 12s. on the average, and the price of flour 2s. 3d. Rents have increased one-third : I should say they were, on an average, about 22s. 6d., instead of 15s. The tithe-composition is about double ; the poor's-rate is very little altered. Thus, in the cultivation of the land, the farmer who occupies a farm has several descriptions of payments to contend with—rent, tithes, taxes, rates, seed-corn, tradesmen's bills ; then his profits, and then his labour. The first payment, rent, is imperative ; the second is imperative ; so also are the third and fourth ; the fifth is always equal to the price of its produce, that is, seed-corn. The tradesmen's bills can undergo little diminution, and the profit may be something or nothing. The only thing, therefore, which we can act upon is the labour. And if I find at the end of the year, with all these imperative payments, that I have not sufficient left for profit and labour, I am compelled to diminish the labour to make up for my want of profit, and thus the labourer, as the weaker party, goes to the wall ; consequently one of the causes of the social condition of the labourer being depreciated, is that all the other payments are so increased that there is not sufficient left to leave a remuneration. I mention this in order to take off the responsibility from the farmer, as if he were the only party whose duty it is to see that the labourer is well paid, as if he had the

sole control, and were able, with low prices or no prices at all, to pay labourers as highly as if he had good prices. Mr. Aitcheson has justly observed that education is one of the most essential and important points in the improvement of the moral condition of the labourer. I agree with him to the fullest extent; but it must be recollected that if education expands the mind, it enlarges the ideas; and if we enlarge the ideas, we increase the wants. Therefore we should bear in mind that as we go on educating the labourer, enlarging his ideas, and increasing his wants, it is our duty to supply his wants. We are not to suppose that if a man be well educated, and can judge for himself, and knows what is right and due to himself, he will submit so easily as he would if he were entirely ignorant of what were his rights. So that although in itself education may be and is a blessing, yet if we do not put the labourer and his family in a better social position, it will prove a curse to him in making him dissatisfied with his lot. The position of the labourer and his family may be improved in various ways. It is not by the increase of his wages alone that this can be done, but by giving him something on which he can rely in time of scarcity and necessity. It can only be done by giving him a good cottage, and, in addition to that, an excellent piece of land, in which he may invest his little savings and those of his family, as it were in a saving's bank, to come out at the end of the year for their benefit. I quite agree with Captain Aitcheson that a piece of land at a remote part of the parish would but little benefit him, considering the distance he would have to walk to it both night and morning, and its liability to depredation. I prefer that it should be close to his dwelling. Then as to the quantity: if the labourer has from a rood to half an acre his master will be likely to lose some part of his services, for that quantity of land requires time for its cultivation which should be devoted to the business of the master. In my opinion from twenty rods to a rood is all that is necessary or desirable—all that the labourer requires (Hear, hear).

Capt. AITCHESON: If it be close to his cottage, he may employ his wife and children upon it.

Mr. BAKER: I think a rood would be quite sufficient. But then with regard to game, I believe that those who have constant employment, and are well paid for it, are very rarely poachers: it is only the idle and unemployed who are poachers; and although there always will be poachers, I confess I do not think it is so much caused by the existence of game as by the absence of that employment which is necessary to abstract the labourer's attention from such a pursuit. I have now concluded the few observations which I have to make. I find that the time will not allow me to take a wider view, as I should otherwise be disposed to do, and should be quite willing to do at any other time.*

Mr. THOMAS said: The subject introduced by Mr. Aitcheson this evening is one in which I have long felt a deep interest. I believe no young man on entering upon the business of a farmer will feel more deeply or keenly than I did the necessity of endeavouring to improve the condition of the agricultural labourer; my first, earliest, and strongest efforts were devoted to an endeavour to improve the general condition of those by whose toil I gained my bread. But I should be sorry if this meeting were to separate under the idea that a general bill of indictment has been framed against the employers of those who are engaged in cultivating the land. My belief is that many scores and hundreds of farmers, who have made the greatest efforts to improve the condition of their labourers, have met with great discouragements. In my own county, farmers who have held out the greatest inducement to their labourers to exert themselves, for example by offering large sums for task work, have almost always been disappointed as regards the amount of the earnings. In the case of sheep-shearing, thrashing, and almost all work which is accompanied by an allowance of beer, it has been found that the higher wages you pay for piece work the smaller generally is the quantity of work the labourer will perform. Where farmers have paid 4s. a score for sheep-shearing, and have allowed so much beer per diem, not more has been earned than in cases in which 2s. 6d. has been paid with the same allowance of beer. I should, then, be sorry if the meeting were to separate with the idea that tenant farmers generally are not performing that kind part towards their labourers which they really are. Looking at the whole country, and comparing it with the civilized world, I do really believe that the wages of the labourer at the present time are higher in the United Kingdom than in any other country in proportion to the price of the food which the labourer consumes (Hear, hear); and competing as we now are with the whole world, I do really think the chances are that the condition of the agricultural labourer will become worse than it is at present. The remedies which Mr. Aitcheson proposes, as I collected them, appear to be principally education and emigration. But there is one cause of the depreciation of the wages

* WRITTLE, JUNE 7, 1848.—In connection with the observations made by me at the Farmers' Club, I send a few extracts from "Minutes of Farming," by W. Marshall, Croydon, Surrey. Published 1783:—

"Aug. 28th, 1775.—The harvest month was up on Saturday night; the men very sensibly wanted a continuance of harvest wages, viz., 3s., instead of 2s. a day.

"The year's wages of a man I have now ascertained is, 48 weeks at 10s., £24; and the harvest month, £3 10s.—no beer.

"Nov. 5, 1775.—Malt 3 bush. at 5s., 15s.; Hops 3lbs. at 1s., 3s.; made 64 gallons of beer. Sold 7 pigs, 76 st. 2lb., at 3s. 2d.; 1 qr. head barley, £1 10s.; potatoes, 1s. per bush.

"The writer is convinced it is cheaper to give labourers 9s. a week and small beer (the common wages of the country) than to give 10s. and no beer.

"Feb. 6, 1776.—Feeding cart-horses: 6 bush. oats, 20s.; quarter of a load of hay, 60s.; hay stated to be worth from £3 to £4 per load.

"1779.—In the year 1774, and for some years preceding, wheat sold at 60s. per qr., more or less, and farms have been let at that all-ruining rate, although it has ever since been under 50s. per qr. The landlords must lower the rents, or the farmers raise the produce, or consign themselves to ruin.

"The prices of labour must ever be proportionate to the prices of provisions; for the labourer, like the farmer, will, if not restrained by law, consult the means of his own immediate preservation, let the consequence to the community be what it may."—Yours, R. BAKER.

of labourers to which he did not advert, and that is the law of settlement (Hear, hear). We all know that in different parts of the country, while one parish has a redundant population, another not very far distant from it is but scantily supplied with labour; and there is a difference of 3s. or 4s. per week in the amount of wages. This is attributable solely to the present state of the law of settlement; and, therefore, in addition to education and more facile means of emigration, I must say that I think we sadly want an alteration in that law (Hear, hear). Gentlemen, there is another cause of depreciation to which Mr. Aitcheson did allude, and upon which I certainly agree with him, namely, the want of security, or to use the word which is now so common, the want of tenant-right. The farmer will not lay out his money in improvements unless he knows that he has some chance of receiving a return for his outlay; and I should blame him if he did (Hear, hear). One thing which ought not to be lost sight of is, that as the value of produce is reduced, in the same proportion does it become difficult to extend cultivation. We know that with ordinary cultivation the soil will yield a certain amount of produce, and that with greater and improved cultivation the amount will be increased. But the question will always be whether the extra produce, or the extra benefit obtained from it, will be such as to pay for extra exertion and outlay. If it do not, if the inducement to improvement be removed, we shall revert to a more primitive state of agriculture; in fact, we shall come nearer to the state of those countries with which we are in competition. Once show that by laying out five or ten per cent. more on our farms we shall obtain a proportionate return, and I believe the land of England is in the hands of those who will do what is necessary. When the reverse is the case a more slow, a more ancient, and a less scientific cultivation will prevail in the country. Gentlemen, there is one other point, which I should be sorry not to allude to before I sit down, and that is the great difficulty which many farmers experience from the fact of there being a superabundant quantity of game on a farm. There is nothing which so extinguishes hope and drives a man to despair, as the seeing his crops destroyed by an enemy upon which he had not calculated. Years have passed in an endeavour to bring your crops to a state of perfection, and then you find after twelve months toiling that your seed has been spoiled by an enemy who takes away the profit before your eyes, without your being able to prevent his depredations (Hear, hear). But that is not all: the demoralization which prevails in parishes where game is extensively preserved is frightful to contemplate. I know many parishes at the present time—I will not mention their names because it would be unpleasant to all the parties concerned—where young men who would be able to obtain good wages are spending their time in idleness, and are quite indifferent to anything like regular occupation. These young men are, however, to be found spending money in the alehouses; and on inquiry I find that they are enabled to do this by selling pheasants' eggs (Hear, hear). There would be no sellers of such things were there no buyers (Hear, hear). But when as much as 4s. 6d. is given for a hen pheasant in a state of incubation, and 10s. can be easily earned in the course of the night, is it to be wondered at that we find young men loitering idly about, and spending their ill-gotten gains at the tavern or the beer-house (Hear, hear)? I will not take up the time of the club any longer: I think the remedies or ameliorations may be comprised in a very few words. They appear to me to consist principally in greater facilities for emigration, which in a thickly populated country like our own ought to be much more free than they are at present; in an alteration of the law of settlement, and an improved system of education. With regard to cottages, I think it is difficult to draw a line, and say where cottages should, and where they need not be built. You sometimes find small proprietors running up a number of cottages as an investment, in the hope of obtaining large profits (Hear, hear). In districts where the land nearly all belongs to one proprietor there can be no doubt that property has its duties as well as its rights; and that one of the first duties of a large proprietor is to see that proper accommodation is provided for those who are obliged to assist in the cultivation of the soil. I am happy to say that I hold a farm situated on an estate where that principle has been carried out to a very great extent. In every case the cottages built by the nobleman to whom this estate belongs have two good rooms below, and three good sleeping rooms above.

Mr. Gordon.—Is the parish an open or a close one?

Mr. Thomas.—It is an open one. The parish is thickly populated, and the estate consists of 50,000 acres.

Mr. Lattimore said: No man can feel more strongly than I do the importance of the question under consideration; and I am very anxious that we should not lose sight of the only effectual means of promoting the permanent welfare of our labourers. I quite agree that it is desirable that the labourers should possess a better kind of dwelling. Cottages combining all the requisites for decency and comfort are extremely valuable, and so far as my own property is concerned, I may observe that I never erected any without securing the advantages pointed out by Mr. Aitcheson; many landowners have I known also, who have paid attention to these points; but you have no right to expect the builder or speculator to erect houses on any other plan than one which he thinks will give him a remunerative interest for the outlay of his capital (Hear, hear). Now as regards building, we find that there is a heavy tax upon bricks; there has been a heavy one on timber, but that has been somewhat relaxed. I do trust that gentlemen who profess a desire to see the cottages of labourers improved will in future be found in the foremost ranks of those who are anxious to reduce the price of the materials for building (Hear, hear). Much has been said on the subject of emigration. No doubt emigration is necessary to get rid of a surplus population where such a population exists; but I ask you as practical men whether the dissolute man, the poacher, or the thief is found willing to emigrate? whether the parties likely to emigrate are not the industrious and best-conditioned

labourers (Hear, hear)? And I venture to say, that in my own parish there is not an adequate number of honest, intelligent, and industrious labourers to carry on the skilful cultivation of the land. If you wish to export the most valuable part of the community, send abroad that class of labourers of which I am now speaking (Hear, hear); on this ground I am not an advocate for emigration.

A MEMBER.—Your idea appears to be a selfish one.

Mr. LATTIMORE.—Whether it be selfish or not, I maintain that I should be an enemy to my country if I wished such persons to go away from it. I admit the benefit of emigration, as a means of getting rid of the worthless class; but I am not an advocate for expatriating those who are the best friends of society. Something has been said about the law of settlement, and I fully concur in the observations on that subject. There can be no doubt that that law ought to be abolished, and that the man who has nothing to bring to market but his skill as a labourer should have a fair field. But after all, if you wish to improve the condition of the labourer, you will find in the end that the only substantial and permanent mode of doing so is by increasing the labour fund which employs them. Now, of what does that labour fund consist in the opinion of any practical man? It has been admitted this evening that the only part of the farmer's expenditure, over which he has any control, is the labour fund. I ventured at the last meeting to introduce a motion, which would not perhaps have met with the approval of the introducer of this question had he been present; but I will venture to say, that if he be sincere in his professions, and I give him full credit for sincerity, he will eventually agree with me that in dealing with this question you cannot lose sight of the expenditure on the farm as shown by the various items which I introduced. I take it that the expenditure of the farmer is comprised under two heads: the first I will call dead weight, of which he cannot get rid; the other is the current expenditure, such as the labour fund, over which he has some control. If there be taken away under the first head too large a proportion of the produce, the comfort and the general condition of the labourer are injuriously affected. I defy any man to shew how the labourer can be permanently benefited except by being constantly employed and adequately paid, and this he can never be unless his labour is remunerative to his employer. If you keep out of sight this important element of the question before us, all your sympathy with the labourer, and all your efforts to benefit him, will be of little avail. At the last meeting I introduced a point which I consider most pertinent to this inquiry, namely, what I termed the moral responsibility resting on the occupiers and cultivators of the soil. Now as a farmer I will not shrink from any responsibility which attaches to me; and in connection with this point I desire to call your attention to a letter published in the *Times*, of Friday last, bearing the signature "S. G. O." I believe the writer is Godolphin Osborne. I do not like anonymous letters; first, because the writers of them sometimes stab others in the dark; and, secondly, because if they conscientiously hold certain opinions, they need not be ashamed or afraid to avow them. I believe this writer is the gentleman whom Sir James Graham, two or three years ago, called a "popularity-hunting parson." He uses such language in reference to the south-west counties of England, that it will be a reproach to every farmer if he does not do his utmost to meet such charges. Among other remarks, he makes the following, in allusion to the proposal with regard to emigration lately put forth in the *Times*:—

"There was a time when I should have started from the idea of seeking to send the poor away from among us—from this land of churches, chapels, schools, and charities—this land whose whole soil has become one great workshop for the production of food, the producing of which would appear to require the active energies of every single labourer—this land in which every poor man is supposed to have a right to relief in destitution, at, or near to, his own door. But, sir, sad and lengthened experience has convinced me that the producer of bread by the sweat of his brow, for his body's sake and his soul's sake can be placed in no worse position than he is at home—in merry England (?) Christian England (?) England the nurse of industry, the very hotbed of philanthropy (?) Late, very late, personal experience—knowledge acquired far and near from those in whom I can put trust—facts of which I am cognizant from sources which defy contradiction—all prove to me that in hundreds of our villages the social condition of man is below that of any country of which I have ever read; that vice is increasing with a speed, and of a character, which would justly call down any, the most awful, judgment on us; that the labourer is defrauded of his hire, oppressed and ill-treated in a way that is a shame on our national character."

Farmers of England, hear this, and say whether you deserve this reproach! Have you done your duty? If you have, I submit that you ought not to rest quietly under such a stigma (Hear, hear). He goes on to say—

"I challenge one and all to prove to me that there is one single mere political evil, any one class of God's creatures, in any land on earth,

—a rather extensive sphere—

"the correction of which, or the social amendment of whom, requires such urgent instant attention as does the evil condition, physical and mental abasement of the labourers in agriculture in the south-western and many other counties."

I submit that if the farmers of England are to have such charges brought against them, it is quite time that they should consider their moral responsibility; and I maintain that when men of high standing and character can make such statements, I was not premature in introducing the question. The point to which I desire to bring you is this, that, if you would not be considered to merit the opprobrium cast upon you by such writers as Mr. Osborne, you should never lose sight of the means whereby alone the permanent interest of the agricultural labourer can be secured. I said something at the last meeting as to difference of seasons. I do not think the present season is likely to be a very lucrative one to the farmer. Bear in mind that you take upon yourselves all the responsibility connected with seasons when you take a farm on fixed terms. Suppose a great num-

ber of labourers should be thrown out of employment next winter, upon whom would their vengeance be first wreaked? Why, upon the farmers. Let every farmer, then, consider the dead weight, whether in the shape of rent, taxes, or whatever other name you choose to give it. Every farmer is bound, as an upright citizen, to consider whether, with this dead weight pressing upon him, he can spare any extra expenditure for labour, however his bowels of compassion may yearn to give increased employment. It is a most important reflection that the farmer wants security for his capital before he can venture on any extra outlay. We often feel, in this respect, like men standing on a floor the foundation of which is undermined; and while we see many an individual sinking down into the gulf beneath, and exclaim, "Poor fellow, it is a bad fate!" we ought not to forget that that fate may be ours to-morrow. There is something in human nature which leads men to think that misfortunes which have happened to others can never happen to themselves. We are too apt to forget that those on whom fell the tower of Siloam were not, in reality, any worse than their neighbours. Want of security is the basis of nearly all the evils to which the farmer is subject. Let him get rid of that, and he will be able with his capital to employ additional labour, as well as to secure his own advantage. I give the mover of this question the greatest credit for sincerity and patriotism; but I am prepared to assert that no permanent improvement can ever be made in the condition of the agricultural labourers of this country unless you improve the position of the occupiers—the employers of the labourers. I hold it as a fundamental proposition, that you can never raise the employed while you sink the employer. By doing justice to the employer the legislature would in fact be raising the condition of the employed.

Mr. A. Gordon said—Feeling the great importance of this subject at the present moment, I have come up from Bristol for the purpose of being present. One object which I had in doing so was to prevent the omission from the discussion of the present system of parochial settlement. I believe that the law of settlement operates as a most grinding oppression to the labourer, and that he cannot be permanently benefited while he is walled up, as it were, in a particular parish, and deprived of a fair and open field for his labour. We are very fortunate as respects the lucidity with which Mr. Aitcheson introduced the discussion. He divided the question into six heads, which I will take in the order in which he placed them. As to education, I conceive that I should be wasting the time of the meeting if I were to dwell upon that subject; because education, however good, cannot be applied to what we are met to consider—the immediate wants of the labourer. I will only advert to one point which Mr. Aitcheson introduced, in connection with which he pronounced rather too strong a censure, namely, the use of maps in schools. With regard to that point, we ought to remember that in an empire which extends over so large a portion of the earth, emigration must be a leading topic; and to accustom children to observe the situation of our colonies on maps does not appear to me such madness as Mr. Aitcheson has stated it to be. The second point was wages. Farmers are very often unfairly attacked with respect to wages, and the cry is raised that they should be forced to pay more than they do to their labourers. It appears to me, however, that the price of labour, like the price of every thing else, must find its level. You cannot expect the farmer to give higher wages than he can get his work done for; you might as well ask him to use a bad plough instead of a good one. I cannot, therefore, join in the anathema which is dealt out against tenant farmers in general. I have no doubt, however, that the changing of parochial into union settlements would be the means of enabling labourers to obtain higher wages than they do at present. A gentleman well known to agriculture, Mr. Greyburn, of Lincolnshire, has said, in reference to the Dorsetshire labourers, that if he had any of those labourers under him for six weeks, instructed them and fed them well, he had no doubt they would be as well worth 13s. or 14s. as they are now worth 7s. I should not like this meeting to break up without having expressed some opinion with respect to parochial settlement. I am happy to find that the Poor Law Commissioners have sent agents into different districts of the country to ascertain what alteration is most desirable. No unnecessary delay I hope will take place, for there is no question of greater importance both to the farmer and the labourer. With respect to cottages, I was much delighted to hear what was said as to dwellings having two rooms below and three dormitories above. With all its faults there is no nation more chaste, none by which domestic decorum is less violated, than the Irish. In Scotland, too, there is the greatest respect for decency, notwithstanding the circumstance that the labourers are too often ill lodged. I fully concur in Mr. Lattimore's observations as to the remission of the duty on bricks. The fourth point introduced by Mr. Aitcheson was the allotment system. A rood of land is the quantity which I have generally found to answer best; and I think it of the utmost importance that it should be near to the cottage, in order that the wife and children, who are the principal workers, may be able to attend to it without the fatigue and inconvenience of a long walk. I do not approve, however, of very low rents. I confess I have let some land as high as £1 5s. per rood, free of tithes, rates, &c. Let me here say that I am rather of the opinion of Mr. Feargus O Connor, that the property of England has got too much divided into large farms, and that there are not enough occupiers of land. (Cries of "No, no"). I do not hesitate to say that I am in favour of having, in some cases, an occupation of seven or eight acres of land with a house built upon it. (A voice "Look at France;" another voice "and Ireland"). I believe that in the county of Down the system answers very well. The devil is sometimes painted black. (Laughter). With regard to emigration, one thing seems to have escaped observation, namely, that if you send the English poor abroad—and I quite agree with Mr. Lattimore that it is the best labourers who are most likely to emigrate—any vacuum which may be created will be filled up by the Irish. The labourers of that country come over by

thousands; at this moment they are spreading over the country like a scourge, reducing the wages of the English labourer at the very time when those wages most require to be raised, and at the same time infecting him with a great many ideas which it would be better for him if he did not acquire. You cannot look at the papers without perceiving that there is a spirit of assassination amongst those to whom I allude, which it would not be well to have introduced into this country. Let us beware, then, lest by emigration we create a vacuum which will be filled up from Ireland. In the case of Scotland, emigration is being carried on to a very great extent; but I am very much afraid, and my fear is grounded on past experience, that if the government take any part, the effect will be to check voluntary movements. As regards the game laws, I can only say for myself that I have, within the last year, given up all my preserves; and I will tell you why I did so. When partial famine and much distress prevailed, I found that my dogs were eating the food of human beings—for instance, barley-meal, and oats—and I could not bear that that should continue. Some years back my own mother, who farmed some property in Hertfordshire, proved before a committee, appointed on the motion of the present Lord Dacre, a loss on 200 acres of not less than £1500 in the year. It was dreadful to witness the amount of devastation. I will only add that a man cannot be expected to lay out his capital in the employment of labour unless he has more security than he can have without a lease. To the north of the Tweed there is scarcely any case in which there is a lease for 19 years. This question concerns the labourer. So also does that of entails; but I am not in favour of abolishing the system of entails: what is needed is, that it should be so altered as to afford facilities for agricultural improvements. I think leases and the abolition of parochial settlements would do more for the agricultural labourer than any thing else.

Mr. LATTIMORE: Add tenant-right.

Mr. GORDON: Leases include tenant right.

Mr. W. BENNETT said it would be unpardonable in him to detain the meeting at that late period of the evening, but he would just venture to say that he regarded the subject under discussion as one worthy the consideration of all right-minded agriculturists (cheers). He thought they were greatly indebted to Captain Aitcheson for the able manner in which he had brought it forward, and he felt equally indebted to Mr. Baker for his excellent speech which followed that of the gallant Captain. The remarks of Mr. Baker he thought exceedingly well timed. It was in fact a very important subject to the country at the present juncture, and one which involved considerations of the gravest kind. On the subject of the education of the poorer classes there was now scarcely any difference of opinion as to the duty of doing so, but only as to the nature and extent of that education. It was difficult to say at what point we should leave off—but he did rather incline to the views of the gallant Captain, that it was hardly wise, in preparing the children of the lower classes for service in after life, to pursue those branches of learning which would be likely to do them but little good, and might have a tendency only to render them uneasy and discontented with their station in life (cheers). But whatever differences of opinion there might be on the subject of education, he thought they were all agreed on one other point, viz.—that there was little chance of improving the moral and social condition of the labouring poor, without providing them with profitable employment (cheers). This should be the paramount object of all states and of all communities, and he could not but be reminded on that occasion of the intelligent observations of an excellent gentleman (the late John Foster, Esq., of Brickhills—a former landlord of his, Mr. Bennett's) made some years ago. This gentleman had received a communication from the late Earl Spencer as to the propriety of establishing a school in the parish where their property was respectively situated. He remembered his words well: they made a great impression upon his mind, which were as follows:—"I am, Mr. Bennett, a great advocate and admirer of education: I think all should be done that can, to improve the moral condition both of children and adults. But in this parish, what is more particularly wanted is profitable employment for the poor. The first want of a human being is food; and unless you put the poorer classes in the way of earning their livelihood, you do very little for them. You may instruct their children, take their parents to church or chapel, and inculcate moral duties; but if you do not first fill their bellies (laughter), if you do not show that you have an interest as well in their temporal comfort, they will feel but little interest in your moral instructions" (loud cheers). The profitable employment, then, of the increasing agricultural labourers of this country necessarily opened a very wide field; and although he was unwilling to touch a subject which might appear somewhat political, and about which there might be some difference of opinion in that room, for the life of him he could not see how the improvement of the social and moral condition of agricultural labourers could be discussed in all its bearings without adverting to recent measures, and the prospect of supplanting the British labourer by an unlimited importation of the untaxed productions of foreign states (cries of Hear, hear). He could not refrain from noticing while on this subject an observation which had dropped from Mr. Lattimore. He said, "Farmers must be particularly careful as to how they manage the labour fund of the farm;" and then asks, "what is that labour fund?" Now as Mr. Lattimore has not attempted to answer his own question, he (Mr. Bennett) would endeavour to do so. The labour fund then, if he understood the term at all correctly, is that which remains from the sale of the produce of the farm after the fixed and unavoidable payments are made, such as rent, tithes, taxes, poor, county, and highway rates, seed corn, repair of implements, maintenance of the stock, and the farmer's own family, &c. &c. Now it is clear a considerable portion of manual labour is necessary to bring out this produce at all—but more especially if we make the land more productive; how, therefore, this subject can be viewed apart from the

consideration of prices, he was totally at a loss to conceive. Gentlemen (continued Mr. B.), can it by any possibility be a matter of indifference to the farmer whether he sell his wheat at the remunerating price of 7s. per bushel, and other corn in like proportion, or by competition with the untaxed productions of foreign states, he has to sell his wheat at 5s. per bushel? Under such a state of things, can any man be insane enough to look forward and expect a great improvement in the temporal comfort or social condition of the labourers in British agriculture, when not merely the ability to employ the increasing population in effecting improvements, but the entire labour fund of the farmer is taken away (loud cheers)? Mr. Baker has clearly shown that the article of labour is the only thing in the control of the farmer. He tells you that within the last 80 years the rents have doubled and in some instances quadrupled—the same of tithes and taxes; and come what may, what signs have we of any relief in these departments? The only hope left to the country under this new and anti-national policy is the production of abundant crops at home. But if it should please God to visit us with unfavourable seasons and scanty crops, the prospect would be truly alarming; and when I see the short and stinted spring crops of the present season, in large districts of the country (I sincerely hope the general rains will improve them), I cannot contemplate the consequences to the working classes, ay, and to the entire community, without feelings of dismay (Hear, hear). While therefore (continued Mr. Bennett) I agree with this meeting that education ought to be given to thepoor, while I think that greater attention should be paid to the improvement of their dwellings, and more still, that the present law of settlement should be abolished and a wider field given to the labourer, I do believe it most absurd and preposterous to expect any material improvement in their social condition—nay, I believe it will be much worse; for distress among the agricultural labourers has been hitherto the exception and not the rule. But if the sinews of industry are to be destroyed, if the means of employment are to be taken from the British farmer, then I say to talk about improving the condition of the labourer is a mere farce; and my sincere belief is that those gentlemen who have been led away with the delusion, if they are honest men, will be the first to say "Hold! it is enough—we are ruining our agriculture, crippling our commerce by exporting our specie, and throwing away our revenue, while no part of the country seems to gain by the sacrifice" (cheers). In conclusion, he ought to apologise for detaining the meeting: but on his part, while he should rejoice to see their condition improved, he felt bound to disclaim all hope of material benefit to the labourers in husbandry if the farmers have not the means of giving them employment (cheers).

Mr. Harvey said:—I think I cannot do better than follow the example set by a previous speaker, of dealing with the several points in the order in which they were introduced. With regard to education, I agree in the main with the mover, with the exception that I do not think there is any great necessity for limiting that education; I am not aware that the landlords of this country ever particularly attempted to educate tenant farmers; but if they had, they might have said that they would not educate them too far. "Increased education," they might have said, "will enlarge the ideas, and give rise to increased wants" (laughter). Some of the tenantry of the country have had enlarged ideas and increased wants; and I do not see why the labourers should not have the same expansion of ideas, and have an opportunity of bettering their condition. With regard to cottages, I entirely agree with what fell from the introducer of the question, and though the question is rather one for landlords than for tenants, I think that even tenants might do something to increase the comforts of their labourers. On the subject of allotments also I agree with Mr. Aitcheson, with the qualifications introduced by Mr. Baker. I think that allotments are admirable things when situated near the cottage, and I am also of opinion that the quantity mentioned by Mr. Baker, namely, a rood, is quite sufficient. Another point is emigration. For that word I would substitute migration (cheers). I do not think we should send all our good labourers out of the country: we should rather seek to give them an opportunity of employing their labour wherever they please. I do not doubt that even the Dorsetshire labourers would be vastly improved by an alteration in the law of settlement. There is a word very popular over the water, in theory, but not in practice, "fraternization." Now I certainly think that we might in some respects improve the relations between ourselves and our labourers, even when we are not able to improve their pecuniary resources. At present, labourers in general do not understand their employers so well as they ought to do. We do not take pains to make them understand us. For example: suppose, on going into a field, we find a man at plough, loitering under a hedge. The man thinks that as he is only receiving 1s. 6d. a day, or 2d. an hour, a loss of five minutes can make scarcely any difference. Whereas if we would only take pains to explain to him the cost of plough and horses, and the pecuniary loss which we are necessarily sustaining through his conduct, he might see that our remonstrance was not unreasonable. It appears to me of great importance that we should endeavour to bring about a better understanding.

Mr. Hobbs said:—I quite concur in the remarks of Mr. Aitcheson on the subject of education. I do think that the education given in many parishes, to the sons and daughters of agricultural labourers, is anything but satisfactory; and I quite agree with a man of the world, a member of this club, who lately said that this was one of the greatest humbugs of the age. In travelling through Scotland last year, I was very much struck by observing the orderly conduct of the rising population of that country; and I was told that there were scarcely any children from six to eight years of age, either in the Highlands or the Lowlands, who could not read the bible, and read it well. Rural education as carried on in this country, principally by the clergymen of the parish, with the assistance of a few of the leading females

in the neighbourhood, but without the support of the principal farmers, does not, I think, deserve general approval. On enquiring into the system in Scotland, I found that there a local schoolmaster was appointed by the ratepayers, the labourer paying a trifling sum per month or per annum; and I believe that the education thus afforded in Scotland is more valued than it would be were it given gratuitously. I am decidedly of opinion that a proper system of education would be a great benefit to this country; and I indulge the hope expressed by a late excellent monarch, George the third, that the day is not far distant when every labourer in the kingdom will be able to read a chapter of the bible. But to teach the rising generation amongst the labouring population the use of globes and maps and history, is not, in my opinion, the way to make them contented. It is more likely to lead them to join in the agitation which is now so prevalent throughout the country, and to send them to beer-houses and those dens of crime which are the hot-beds of sedition, of drunkenness, and of ruin. The keeper of a beer-shop takes care to have ready once a week an itinerant politician; and thus those seeds of sedition are sown which will, I fear, one day prove very injurious to this country. If the malt-tax were repealed, and the labourer had an opportunity of drinking his beer by his own fireside, he would then be in less danger from the evils which I have stated. In reference to allotments, I quite agree in opinion with Mr. Emery, who has perhaps seen as much as any man of the system of allotments. He told me that he had tried the acre, the half acre, and the rood; and it was his firm conviction that an eighth of an acre was the best quantity. I concur also in much that has been said with respect to cottages. That is a point to which I think the landlords would do well to pay more attention. On the subject of wages I cannot entirely agree with what has fallen from Mr. Thomas. It is, in my judgment, most important that practical farmers should carry out as much as possible the system of piece work. It is not in human nature for a man to work as hard for 20d. or 2s. a-day as he would if he had a chance of getting something beyond. Manufacturers do not act upon the system which is prevalent amongst farmers. All that farmers can possibly require is twelve-penny worth for a shilling; and if a man could by piece-work earn 2s. 6d. instead of 2s. we ought by all means to encourage him to do so.

Mr. Thomas explained—What he had meant to say was, that it was useless to give a higher price for piece-work than was ordinarily paid.

Mr. Hobbs—I may observe in reference to the Royal Agricultural Society that a prize has been awarded by that Society for an essay on this subject. I will only add that, however much many of the tenantry of the country may be blamed for not employing more labourers, the landlords are most to blame in the matter; for it is not to be expected, whilst landlords give no security for profitable investment, that the tenantry can advance their capital for additional labour. It was proved before a committee of the House of Commons that leases are the exception and not the rule; and I do say that it is the duty of the landlords to give up that semi-feudal system by which they keep their tenants under their own control. If they would give leases or some kind of fixed tenure there would be no need of emigration, there would scarcely be a labourer to spare in the country.

Mr. Eve said: The situation of the labourer has with me always been a primary object; and I think its importance altogether paramount. I agree with the doctrine of the Bishop of London, that the education of the labourer should be a religious education? What is meant by a religious education. It is the teaching them that which will make them good and happy. Such an education will make the drunkard sober, the unclean chaste, the stubborn humble and tractable. Solomon says that "with all our gettings, we should get wisdom;" and it must be supposed that, having got wisdom, we ought to concentrate it all upon ourselves. In the parish in which I live I require every labourer whom I employ to attend church on Sunday. This has been the case for the last fifteen years; and though at first it was thought very coercive, the labourers are now grateful to me for my plan of operations. The Saviour tells us to "go and *teach* all nations."

A Member of the Club here said: We are all agreed as to the value and duty of education (Hear, hear).

Mr. Eve: I agree in the main with Mr. Lattimore with regard to emigration. If a proper state of tenancy existed, I think there would scarcely be an unemployed labourer in the kingdom. Farmers would increase their acres, and extend their operations: labourers would no longer be tempted to poach, and all those evils which attended a state of idleness would be avoided. With regard to cottages, I would just read an extract from a letter I have received from the Rev. Mr. Benyan, a member of the Royal Agricultural Society. He says:

"I see you have been, in your Aveley Farmers' Club, suggesting the improvement of the labouring classes. I am glad to see occupiers take up this point: it will do a great deal of good.

"I have it in contemplation building a few model lodging houses on my estate, for young men, where they will have a common hall to dine or sup in, and a bed-room for each, and a master and mistress to superintend the whole; and by having it very close to me and looking after it, I think it may be of some use in bringing up the young men, and preventing early and improvident marriages, and also the overcrowding the cottages, which, in my opinion, is the root of a great deal of evil. Some plan of this sort has become more necessary since the population has so much increased, and also the old fashion of having farm-servants in the farm-house has been abolished."

This gentleman, I would observe, is in the constant habit of visiting seventy cottages every day, and is therefore fully acquainted with the condition and the wants of the labourers generally. I will only detain the meeting further while I state one fact in connection with my own employment of labour. I have occupied my present farm fifteen years: I have had no increase of acreage during that period. I do not farm one single acre more now than I did at the commencement; and yet I am now paying £10 more per week for labour than I did when I first entered upon my occupation. There has not been a single cottage built since I came into the parish; consequently I must have drawn the

surplus from a distance. The extra labourers have to walk two miles, morning and night; and I consider that that is quite equal to one day's labour per week. It is very clear that an alteration in the present system—including an increase of cottages—is necessary to meet the wants of the labouring classes. Especially must attention be paid to education; for Dr. Channing truly said, that "the workman who possessed education found an easier and shorter cut through his labour."

Mr. AITCHESON replied briefly, expressing the satisfaction which he had felt at finding that the subject had excited so much interest, and called forth so many excellent remarks.

Mr. GORDON begged permission to add one observation to what he had previously said, before the discussion was brought to a termination. It was that landlords should always pay the rates of cottages the rent of which was under £5 a year. He thought that in those parishes where local acts compelled landlords to pay the rates for leases under a certain value, the working population are generally found to be most comfortable.

Mr. MECHI also begged to be allowed to state a fact. A friend of his in Herefordshire employed twenty boys as farm servants, whose ages varied from nine to fourteen; they were boarded, clothed, educated, and constantly kept under good superintendence. The expense was 4s. per week for each; and the result of the system pursued was, that on a farm of 450 acres the hoeing and drilling were superior to any thing of the kind in the neighbourhood.

Mr. KNIGHT regretted that no allusion had been made to the subject of benefit societies, and referred to the case of a society in his own neighbourhood which had been established for twenty-eight years, and had now, £3400 at interest in the National Debt Office.

The CHAIRMAN said: Gentlemen, it would ill become me to trespass long upon your attention, considering the very elaborate and excellent manner in which this question has been discussed. I certainly have not been disappointed in the interest which I anticipated the question would excite. I feel convinced that no subject has been spoken to by so many members of the club, with so much effect, for a considerable period, nay, I may almost say from the commencement of our discussions, as that which has been introduced on this occasion. I cannot, however, neglect the opportunity of making two or three remarks before I submit to you a proposition as the outline of a resolution on this subject. First, with respect to emigration, let me observe that those gentlemen, who threw difficulties in the way of emigration, took up a position which it is impossible to controvert. They said: "If you send out of the country all our best labourers, the effect will be bad." That is perfectly true. It is also true that the better class of men who entertain notions of independence are those who will be most likely to resort to emigration. I still think, however, it is possible to make arrangements which will induce parties to emigrate, who, though not yet reduced to the necessity of doing so, might perchance, through competition, become hereafter burdensome to the country. The principle of emigration is not applicable to England as a new system. We know that in ancient times, when countries became too thickly populated, a portion of the inhabitants emigrated and formed new colonies; and although if the field of labour were sufficiently open in this country, that Utopia which all desire might possibly be realized, and every man in England be sufficiently employed, yet as practically such arrangements cannot be brought about immediately, it becomes a question whether we should throw any difficulty in the way of parties, nay, whether we should not afford facilities to parties, who by emigrating may render themselves independent through the labour of their hands (Hear, hear). I have another remark to make with respect to the dead weight to be overcome by the farmer, and to which allusion has been made. It has been said that labour is the last item of expense to be considered, as though that were the only thing which need not be remunerative. Now, I contend that, as a broad proposition, such a position is wholly wrong. I say, that if there be any chance at all for the farmer, it is through his looking his difficulties boldly in the face, and that if he is to overcome those difficulties it must be by his taking an improved position as respects the cultivation of the soil, not by saying, "I have so many payments to make; and as all the rest are unavoidable, labour must suffer;" but the very reverse, namely, that it is by an increased expenditure in labour he may be enabled to meet those payments. I am free to admit that there is something else in the background; that it does not rest entirely with himself, but that landlords must give facilities for improved cultivation before the labourer can be fully employed. But I do say that it is by expenditure on labour under proper circumstances that we can alone hope to overcome the difficulties by which we are surrounded.

Mr. GORDON: You must have leases.

The CHAIRMAN: Now my friend Mr. Lattimore has alluded to some observations of Mr. Osborne, and he has said: "That is a disgrace to you, British farmers; it is necessary for you to consider well whether you will blot it out, or continue to lie under it."

Mr. LATTIMORE explained that he had meant to say that it would be a disgrace to farmers if such observations were merited, and he hoped they would take care not to let them be merited.

The CHAIRMAN: Yes, but I fear it will go forth to the country that Mr. Lattimore said that that is a disgrace to the farmer. I must say that, much as I generally admire Mr. Osborne's writings, I think that, with regard to the labour question, he has taken a most distorted view (Hear, hear.) I cannot imagine anything more unreasonable, more outrageous, than to state that it rests with the farmer what wages he shall pay. Dorsetshire and Lincolnshire have been adverted to. Why place those two counties on a par with respect to advantages? (Hear, hear). Place them in the same position as regards tenure, and let there be an equal security for the investment of the farmer's capital, and I have no doubt that the Dorsetshire labourers would soon be as well employed, as well paid, and ultimately as useful as those of Lincolnshire. I do say, then, that those men are

very short-sighted who would visit upon a class that which belongs to a system which the class cannot alter (Hear, hear). I will now advert for a moment to an observation made by Mr. Hobbs, and in substance by other speakers, with respect to education. I contend that wherever you look, whether at the criminal returns, or any other source of information, you will find ignorance to be the handmaid of vice, and that in proportion as education is advanced, although in some cases it may be misused, there is corresponding benefit. I will remind my friend, Mr. Hobbs, of a circumstance which I am sure he cannot forget. When the Royal Agricultural Society met at Newcastle-on-Tyne, it was a source of gratification to every individual from the south, who had anything to do with the management of the cattle-yard and the implements exhibited, to observe how admirably all the labourers seemed almost to anticipate, everything that was required to be done. The gentlemen from the south all perceived on that occasion a marked distinction between the aptitude of labourers of the south and those of Northumberland. What caused the difference? Why, education. Talk of maps and algebra! Go to Scotland, and you will there find the classics and mathematics frequently taught, and not uncommonly a peasant's son reading Horace and Virgil (laughter, and expressions of incredulity). I say that it is the case in some instances. I say educate the labourer by all means; and rest assured that in so doing you will best serve your own interest, inasmuch as you will find him more capable of performing a good day's work, and in more workmanlike manner.

Mr. Hobbs said the Chairman had misunderstood him if he supposed that he was an enemy to education. He was only an enemy to education as carried on amongst the labourers in some of the southern counties of England—an education by which they were scarcely taught to read the bible, while they were taught other matter which only tended to make them discontented. He believed that a system of education like that which existed in Scotland, would teach the labourers their duty to God and man, and thus make them far better and more useful in their sphere.

The Chairman then proposed the following resolution—

"That the most efficient primary means of improving the condition of the agricultural labourer will be obtained by placing the employer in a situation to invest his capital in labour with a reasonable prospect of obtaining a profitable return. That, in addition to this, the abolition of parochial settlement, a better system of education, an improved plan of cottage, the addition of a small allotment adjacent to the cottage, and the extension of mutual benefit societies, are most important elements."

Mr. Hobbs seconded the resolution, which was carried unanimously.

On the motion of the Chairman, a vote of thanks was given to Mr. Aitcheson for the manner in which he had introduced the subject.

This having been briefly acknowledged by the introducer,

Mr. Harvey proposed, and Mr. Gordon seconded, a vote of thanks to the Chairman, both for his conduct in the chair and his admirable summary of the discussion.

The motion was carried by acclamation, and briefly acknowledged by the Chairman, after which the meeting separated.

ANTIQUITY OF THOROUGH DRAINING IN SUFFOLK.—The following extracts from a book printed 120 years ago, styled "A Complete Body of Husbandry, collected from the Practice and Experience of the most Considerable Farmers in Britain; particularly setting forth the Various Ways of Improving Land by *hollow-ditching, draining,*" &c.; by R. Bradley, Professor of Botany in the University of Cambridge, F.R.S., 1727, will prove the antiquity of thorough-draining in Suffolk. Professor Bradley mentions hollow-ditching or draining was adopted at that time on the adjoining wet land of Suffolk. It would take up a considerable space to extract the whole of Bradley's description of *hollow-ditching,* though I shall give sufficient to show that the system then adopted resembles the present practice, the latter being an improvement on the old method of draining. "These drains, whether they be the great or small ones, must be made two full spits of a spade deep and half a spit, sloping on each side from near three feet wide at the top to about half a foot at the bottom, and then some large rough stones or cows' horns laid at the bottom for the water to run through, with some straw over them; or else a few boughs of elm, white-thorn, or hawthorn rammed into the bottom, and straw laid over them, and then covered with the earth that was dug out. When all are completed and settled, then you may plough the piece and dispose it equally on such a level as it will bear. This method is accounted the best and cheapest way of hollow-ditching or draining, and will make the wettest squally land fit to bring very good corn, or to be laid down for grass, or other uses. The common price for digging and laying the stones or bushes, and filling up the drains, is about twopence-halfpenny or threepence a rod in length, but the owner or possessor of the ground must find bushes and straw, which, together with the digging and laying, will amount to about sixpence a rod. A large field, I confess, will amount to some money; as, suppose there may be required one thousand rods of this work to drain twenty acres, the expense, at sixpence per rod, will be twenty-five pounds, or after the rate of one pound five shillings for the improvement of each acre, which is but a trifle considering that the ground before was neither good for bearing corn or grass, and will now bring good crops of any kind. This improvement is chiefly practised in Essex: I have seen it at Navestock, in the forest, at an estate belonging to Aaron Harrington, Esq., and is lately brought from that part of the county to the north of Essex about Wicken-Benant, and near Sir Kane James's; and I doubt not will be generally used upon all the squally wet grounds in England when it comes to be known, for it is *but a late invention;* only it is to be noted that the ground should lie sloping or declining one way or other to be mended by this means." The prediction of Mr. Bradley that this improvement of wet land would become general, shows that his work on husbandry was not much read by the farmers of the eighteenth century; for, if they had been of more studious habits, they would, on trial of the practice, long ere this have seen the benefits of (what is generally considered to be the modern invention of) thorough-draining. That the system of which Bradley speaks is a thorough-draining system, is proved by his mentioning the number of rods required on a given space, viz., 1,000 rods on 20 acres, which being 50 rods to the acre, will make the drains about three times the distance apart that they are at present in the eastern counties. The term *thorough-*draining is perhaps derived from the old word "thorrow," which Bradley mentions as "a distinguishing character for a trench cut purposely for carrying off water."

THE ENGLISH AGRICULTURAL-CHEMISTRY ASSOCIATION.

A general meeting of the subscribers and friends of this Association was held on Wednesday, June 7, at the Thatched House Tavern. The chair was taken at noon, by his Grace the Duke of Manchester.

The noble CHAIRMAN said he would not detain the meeting by urging the necessity which existed for such an institution, but he would at once call upon the Secretary to make a report of the proceedings up to that time.

The SECRETARY (the Rev. A. Huxtable) then said: My Lord Duke and Gentlemen, my first duty is to explain the absence of many gentlemen who have taken a lively interest in this association. We have more especially to regret the absence of Lord Portman, who is confined to his bed by severe indisposition. I have also received letters from the Duke of Sutherland, and other noblemen, who express their regret that absence from town will prevent them from attending on this occasion. I mention this in order to account for there not being so many present as the importance of the subject might have led us to expect. It will not, perhaps, be foreign to the object, if I refer briefly, at the outset, to the history, or rather the origin, of the English Agricultural-Chemistry Association. It was felt by many gentlemen connected with agriculture that there was needed in this country some national laboratory for the improvement of agriculture. Although there were many valuable local clubs which paid a chemist for conducting analyses, and although there were in this country many first-rate scientific men capable of executing any analyses which would be required, still it was felt that the wants of English agriculture were so pressing, the applications for the performance of analyses so numerous, and the fees charged for the use of private laboratories so far beyond the power of most farmers to pay, that it was desirable, in imitation of the Scotch association, to establish a national laboratory entirely devoted to the analysis of soils, manures, and vegetable products. I may here observe, in reference to the Scotch Agricultural-Chemical Association, that its formation in 1842 was due not to the landlords, but to the enterprising and improving tenantry, of Scotland. The tenants of that country felt with respect to the purchase of guano and oil-cake, and the application of lime-stone, that unless previous analysis had shewn the relative values of the substances required, it would be impossible to go into the market with confidence or to use what might be purchased there with safety. You are all aware that manures are liable to great adulteration, and that there is with regard to them much imposition. The very first manure forwarded to Mr. Way was a sample sent to him by a great farmer of Essex. It contained no adulteration; but though it was perfectly genuine, it had 19 per cent. of water. Now the proper average of water in guano is from 10 to 11 per cent., therefore if that gentleman had bought his guano without having a deduction made on account of the excessive water, he would have paid 8 per cent. of his money for pure water alone. The party who had sent him the guano, on the analysis being shewn to him, made the requisite deduction, and if only a few tons were purchased the saving thus effected would far more than cover the amount of his annual subscription to this association. It will be observed that one object of the association is to engage a chemist of the highest attainments to execute, for a small fee, analyses of manures and other substances. I say a *small* fee; for it is impossible for any person, who is acquainted with chemical processes, to examine this book and see the analyses which Professor Way has made at the fee of £2 or £3, and not feel that such analyses must have cost him at least from £8 to £9. And when, moreover, we come to some of the more delicate subjects in which we are interested as agriculturists, I refer especially to the estimation of nitrogen and phosphoric acid, we know that these processes are of such a nature that none but the highest chemical attainments can be of any authority. Those who are not acquainted with chemical manipulations may not be aware that some of those performed by Mr. Way cost two or three times the sum which he charges. Therefore, although the sending of a vast number of substances to the laboratory for analysis may be very beneficial both to the parties who send them and to the progress of science, it is, you perceive, anything but conducive to the pecuniary interests of the professional chemist. Let me now enter into detail respecting the work which has been done in the past four months during which the laboratory of the association has been in operation. I ought perhaps to correct myself: it is not the laboratory of the association; and one of the peculiar claims which the association has to attention and support, is that the parties subscribing incur no responsibility whatever. It is well known that many persons who have been engaged in schemes for improving agriculture and chemistry, and so on, have, in respect of shares and buildings, incurred a very serious amount of responsibility. In this case, the subscribers agreeing to pay at their option a subscription of £1 or £5 a year to the funds of the association, the chemist, in return, finds the laboratory, and undertakes to bear every expense. The members, therefore, incur no risk whatever; and that we shall obtain "our money's worth" I hope to show you in a very few minutes. One of the most important of the inquiries submitted to Professor Way is connected with the analysis of soils. There is a gentleman here (Mr. Paine) who has had so much experience on this subject, that I do not mean to dwell upon it in his presence; but I may mention, for the information of parties who may

wish to send soils to the laboratory, that what is called "a rough analysis" of soils is of comparatively little value. For instance, Sir R. Peel sent to Mr. Way four different marls, in order that he might estimate the quantity of lime contained in each. Numbers 1, 2, 3, and 4, all contained from 10 to 12 per cent. of carbonate of lime. It might, therefore, have been supposed that they were nearly equal in value; but the truth is, that of two of these containing nearly the same quantity of the carbonate of lime, the one possessed two-tenths only of phosphate of lime in one hundred parts, while the other contained more than one-and-a-half per cent. of this valuable ingredient. So that Sir Robert Peel, in carrying on his land one ton of the latter marl, would convey to it as much phosphoric acid as is contained in one cwt. of bones. This shows the immense value of a detailed analysis. Some manure was lately sent to Professor Way for analysis, for which £6 per ton had been charged. According, however, to its chemical composition, when compared with the same substances found in Peruvian guano, it was not worth more than £4 per per ton; so that the gentleman who paid £6 per ton lost 50 per cent. by his purchase. Many of the remaining analyses, of which I shall have to speak, especially concern myself. I refer to them now, partly because I have derived so much benefit already, during the four months which have elapsed, from Professor Way's analyses, that gratitude alone would impel me to illustrate and enforce the merits and value of this association. There is a gentleman present—Mr. Lawes—who wil excuse my saying that his papers, published in the *Journal of the Royal Agricultural Society*, really form an epoch in the progress of agricultural chemistry in this country; so accurate, so scientific, and important are the results at which he has arrived, that it is impossible duly to estimate their value. For although, gentlemen, we cannot expect, by the application of chemical science to agriculture, to bring out such startling and surprising results as we obtain in the case of the arts—for example, by the application of electro-magnetism to the purposes of telegraphs, &c.—yet it must be remembered that the smallest improvement in the cultivation of land has to be multiplied, as it were, by so tremendous a factor; in other words, there are so many millions of acres to which the improvement is applicable, that it is almost impossible to over-estimate its value. Now Mr. Lawes has put beyond all doubt the conditions on which alone we can hope to grow large crops of wheat, and at the same time has disencumbered the question of a vast number of circumstantials in which it was before involved. He has shown that nitrogen and phosphoric acid—more particularly nitrogen in the shape of ammonia—is the grand essential for growing wheat, and therefore that the principal commercial inquiry, if I may use the expression, which we have to prosecute, is how we may most readily obtain a cheap supply of ammonia. Now the value of ammonia, as derived from its principal sources—guano, and the sulphate of ammonia of the gas-works—cannot be estimated, I believe, under 8d. per lb. I would put it to Mr. Lawes, what he considers to be the price?

Mr. Lawes: It is from 7d. to 8d.

The Secretary continued: You are aware, gentlemen, that the grand source of ammonia is in the decay of animal and vegetable products; and if from any quarter we can get a cheap supply of ammonia, we are, in fact, getting a cheap supply of bread. A gentleman told me recently that he thought a certain manufacturing refuse, which is to be found in London in very large quantities, would afford a cheap supply of ammonia. The refuse in question was that of seal's-skins, &c., of which many hundred tons are annually thrown upon the market. An outlet can scarcely be found for this refuse. As it would have taken me, perhaps, a whole year to ascertain the value of this substance as manure, I sent some of it to Professor Way for examination. He drew out an analysis of the seal's-skin; and his analysis gave us the mean amount of nitrogen (the result of two different experiments) 10½ per cent. You will observe that this contained nearly 40 per cent. of water, which must be deducted from the 10½ per cent.; but even making this deduction (since this manure was put on the railway for 18s. per ton), I could, from this source, get ammonia for less than 2d. per lb. Now the next point is this: if you want a top dressing for your corn crops, it is vain to cast an animal substance on the surface: in the first place it will hardly decay at all; and, in the next place, if it does, you will lose its ammonia. If, in the autumn, you wish to apply these, and kindred substances, to wheat, the plan of proceeding is simple. You should, particularly in the case of calcareous soils, plough it in, and leave it slowly and gradually to decompose. I have for years used such substances in that manner, and with the best results. But I wanted ammonia as a top dressing in the spring, and it was on that account that I first applied to Mr. Way. The great question was therefore, how I could convert the nitrogen of the seal's-skin into ammonia. Professor Way accordingly sent to me a statement of the way in which this might be done, and I shall feel great pleasure in repeating this to the meeting. It is well known to all chemists, that the nitrogen of animal bodies may easily be set free by the application of a warm alkali, and at the same time of water; and of course that warm alkali in the case of farmers would be caustic lime: so that, if you take half a ton of this seal-skin or seal-hair, mix it with lime, and then pour in water, so as to slack it, and then place on the surface a great quantity either of sawdust steeped in dilute sulphuric acid, or of charcoal, or of charred weeds, such substances will fix or condense the ammonia as it is escaping from the mass. You may afterwards use this as an ammoniacal dressing for the land at a cost of about 2d. per lb., whereas you cannot get the same substance in guano under 7d. It is very important that this subject should be understood; for hundreds of tons of animal matter are thrown away every year for want of knowing how to use it. A gentleman from the Isle of Lewis told me, that in that part of the island the inhabitants often catch a large quantity of bottle-nosed whales. He had seen 70 caught in one day, and in one instance more than 700 were captured. When a report is spread that whales are in the neighbourhood, the people all put out to sea in boats, and drive them to the shore. I asked him what was usually done with these whales; and I learnt, that when the oil has been extracted the carcase is, by order of the Board of Health, actually dragged into deep water by means of luggers, and there sunk. Now, if any mode of obtaining the ammonia could be devised, there would be a proportionate increase of national wealth. As an improvement on the rude plan of throwing quick-lime into a heap against a wall with rags, and putting outside a considerable covering of substances which would condense or fix the ammonia—as a substitute for this rude plan, Professor Way gave me a design for a kiln, which I now send round for your inspection, and which might be built for 4*l*. or 5*l*., and would, he said, infallibly secure the ammo-

nia. I will not speak of the supply of phosphate of lime, because there are gentlemen here who will by-and-bye tell us, I hope, how we may get a large and cheap supply of that excellent mineral; but I pray you to bear in mind the importance of every fresh source of nitrogen, seeing that it is the one grand requisite for improvement in growing grain crops. The next analysis which Mr. Way made for me was of great interest, and much public importance. Mr. Lawes has shown, in his second paper on the growing of turnips, that by the direct application of nitrogen you can nearly double the weight of nitrogen in the crop; and what is peculiarly remarkable is, that the leaf of the turnip contains a larger proportion of nitrogen than the bulb. Gentlemen connected with practical agriculture know that about the month of October, when all the root crops tumble in at once, there is, if I may so say, a perfect *embarras de richesses* as regards such food. What we could wish to do is to feed the crops off by means of sheep; but it is impossible to do that within a month or six weeks: you cannot get stock enough for that purpose. Now, I had read that in Russia and in Germany they are in the habit of pickling cabbage-leaves, and I made some experiments years ago in the pickling of all sorts of leaves. I found no difficulty whatever in preserving carrot-tops, but with regard to mangel wurzel leaves and turnip-tops the case is different: these leaves contain so much water, and they so soon decay, that although they have a larger proportion of nitrogen and phosphate of lime than is found in bulbs, yet, as it has been found impossible to preserve them, they have attracted but little attention among practical agriculturists. I made some experiments upon them which failed; but I also made one experiment which, though I at the time proclaimed it a failure, you will perceive was *not* a failure. I dug a pit in the chalk nine or ten feet deep, and filled it with mangel wurzel leaves, which I put down in layers, and covered with salt—two pounds of salt to each hundredweight of leaves. On opening the pit two years and a half ago, I observed such a smell that I was ashamed of the result, and, covering up the leaves again, I thought no more of the matter. But the other day, on sinking a deep tank, I cut into this pit, and then found that within six or eight inches of the top the leaves were perfect—every fibre was perfect; and when I offered this substance, a sample of which I now send round for your inspection, to the cattle, I was astonished to find that although it had a sour smell, like what is called by Germans "sauer-craut," the cattle, sheep, cows, and pigs ate it with avidity. The important point which I wished to ascertain was, whether there had been a great loss of nitrogen; because I believe it may be proved, *cæteris paribus*, that the value of any fodder is in direct proportion to the amount of nitrogen which it contains. With regard to turnip-tops and mangel wurzel leaves, it is well known that when fresh pulled they purge cattle, and on that account they are considered of little value. Mr. Lawes says that the cause of this effect is that the sap is imperfectly elaborated or ripened. Last year I accidentally discovered a very simple remedy for this. I cut some turnip-tops in the beginning of November, and allowed them to lie in the field for some weeks till they were withered a good deal. My breeding ewes had nothing except these turnip-tops, refuse turnips, and straw from the month of October until within a fortnight of the period of their lambing. In every instance, if you let a cow at pasture have turnip or swede tops, the result is the production of a very rich milk, the cream of which is extremely thick. The reason of this is, that such tops contain a large proportion of nitrogen and phosphate of lime. If these substances could be preserved, the benefit, especially to small farmers, would be exceedingly great. Professor Way's analysis indicates that, weight for weight, the pickled leaves to which I have referred contain more nitrogen than when they were put in the ground. That arises from the loss of water which has been sustained. Of course, on being taken up after the lapse of two years and a half, they must be exposed to a species of fermentation; it does not follow, however, that there has been any material loss of nitrogen. Now I think, gentlemen, you will all see the practical effect of this upon agriculture, especially in the case of small farmers, enabling you to lay by a store of green food for any hour of scarcity; and when you recollect that one acre of good carrots will produce six tons of tops, and other root crops a proportionable weight of leaves; and further, supposing that you are able to preserve the nitrogen by storing them in a pit in a porous soil, it certainly appears to me that the value of the root crop is not to be estimated merely by the bulb, but also by the leaves. I do not wish to take up any more of your time; and yet there is one other analysis made by our chemist, among the many which he has performed, or perhaps I should rather call it a calculation, which I am desirous of bringing before you. In my own laboratory there was a solid unbroken bone, which I had put into a small cup, and allowed to stand in diluted muriatic acid of the specific gravity of 1.150. In the course of two months, the phosphate of lime was completely dissolved, reduced to a paste. Now muriatic acid is a gas which requires two parts of water to keep it liquid. It occurred to me that I might make it myself; I therefore wrote to Mr. Way, saying that, as salt was so cheap, I should be glad if he would inform me what proportions I should add of water and of salt to sulphuric acid in order to produce 1 cwt. of muriatic acid. This was a calculation which gentlemen experienced in chemistry could make themselves; but I thought it best to send to the chemist, and he informed me that if I added 56lbs. of salt, and 48½lbs. of sulphuric acid, (sp. qr. 1.845) and 6 or 7 gallons of water, I should then produce 1 cwt. of muriatic acid of the exact specific gravity required. I have found this to be a matter of the greatest practical importance, and I would recommend gentlemen when engaged in dissolving bones in this way, to take care to mix the sulphuric acid in the water, that is three gallons of water with 48½lbs. of acid, to let it cool. The 56lbs. of salt should be dissolved in 8 gallons of water, and mixed with the crushed bones. Then pour in diluted acid. But this addition of the diluted acid must be done gradually; otherwise there will be so much fuming that a great deal of the muriatic acid will be lost. For two years my bones have been occasionally prepared in that way, and the consequence is that in a drought, where I have drilled-in the bones, I have seen a moist lime round the bones an inch wide, and the plants come up in the driest weather. There is yet one more practical use to be stated. Suppose you want to apply a top dressing of guano. It is well known that phosphate of lime in guano is not soluble in cold water. Now, I have found that in all cases, when you want to apply it as a top dressing, the best way is to use it as a liquid manure. In every cwt. of guano you should apply one-third of the weight of salt and one-third of sulphuric acid, in the way above stated, which in a few days renders the whole perfectly soluble; and if you mix it, you may apply this solution even in dry weather without burning your land. Now, gentlemen, you cannot but be aware that Italian rye grass is looked upon with great suspicion; indeed, I have heard many large proprietors declare that they would not allow any of their tenants to grow it, so exhausting do they consider it. And it is exhausting; but I wanted to know how exhausting it was, and, in order, to prevent any possibility of mistake, I sent some of it to Professor Way. I made my bailiff weigh a quarter of an acre, and the result was 6 tons 8 cwt. per acre; this

was the second cutting, and was not so large as the first. I wished to know how I could prevent the deterioration of land from the growing of such immense crops, as I hope to cut it five times. If I multiply 6 tons by 5, that would give 30 tons of green food per acre. I sent to Professor Way a portion of this crop to analyze, in the green state in which I sent it, having had it cut dry in the morning, after the dew was off. From an examination of 4lbs. it appears that each ton contains 8½lbs. of nitrogen—a bushel of wheat containing 1lb. of nitrogen. So that this one cutting of Italian rye grass carried off the land 51lbs. of nitrogen, which is equal to 51 bushels of wheat. Multiplying that by 5, it will be found that 30 tons of Italian rye grass would in one year carry off what is equivalent, so far as nitrogen is concerned, to 255 bushels of wheat. Now, gentlemen, this is indeed an exhausting crop! But, on the other hand, though it is so exhausting, if we can restore, after each cutting, a proper supply of nitrogen, we get a greater amount of nutritious food than in any other crop. Now, Professor Way explained to me how I should, if I used Peruvian guano after each cutting, be under the necessity of applying not less, to replace these 51lbs. of nitrogen, than from 4 to 5 cwt. of guano after every cutting. Surely we must all feel that it is important to know this. Yet how *can* such knowledge be obtained but by means of chemistry? So that, my lord duke and gentlemen, without taking up more of your time, I think you will feel that the experience of four months exhibits such important results, that the provisional committee, who founded this association, have already been justified in taking that step, and that the institution deserves extended confidence and support (cheers).

Mr. E. DENISON, on rising to move the first resolution, said: He was authorised to state that Sir Robert Peel regretted that he could not attend in consequence of his having to act as chairman of a private committee. The Earl of Ellesmere was also precluded from attending by the necessity of being present at another meeting, held that day at the British Museum. The resolution which he had to move was as follows: "That the report made by the hon. secretary exhibits the benefits which the English Agricultural-Chemistry Association is calculated to confer upon the farmer; and that the association, in the opinion of this meeting, is worthy of increased confidence and public support." He came there as a person connected with the land of the country, in the earnest hope that he should derive practical benefit from the association. It was about ten years since the formation of the Royal Agricultural Society, and he believed that science, as diffused by that society, benefited him, in a pecuniary point of view, to the extent of about £300 per annum, through the improvements to which it had led in the manufacture of the single article of pipe-tiles. An excellent machine which cost £30 was the instrument of that saving. On his way to the meeting he had met a friend, who lived about twenty miles from his own residence in the county of Nottingham. On his stating that he was about to attend this meeting, this gentleman informed him that for the last two years a local association in his neighbourhood had employed a chemist to assist in the cultivation of soils; and an intelligent farmer had stated that, through the services rendered by this professional adviser, the crops on his farm had all increased to the extent of one-fourth (Hear, hear). As the Royal English Agricultural Society consisted of between 6,000 and 7,000 members, he could not doubt that this association would receive adequate support; and as the English Agricultural Society had sprung out of the Highland Society, and the latter had incorporated with itself the Chemistry Society, he trusted a similar incorporation would take place in England.

The Earl of BURLINGTON said that after hearing what had fallen from Mr. Huxtable, no one present could entertain the least doubt as to the benefits which this society was adapted to diffuse in the agricultural community. If any doubt existed before, it must have been removed by the striking results already obtained. He trusted that the association would meet with the success it deserved, and that it would be the means of removing the prejudice which existed amongst a large class of farmers against the application of science to agriculture. A notion prevailed in some quarters that science and facts were opposed to each other; as if there were anything deserving the name of science which was not based on facts (Hear, hear). He could not consider science as anything else than the soundest reasoning founded on facts; and he hoped the association would be instrumental in eradicating the error which prevailed on that subject.

The resolution was then unanimously agreed to.

Mr. G. M. PAINE proposed the following resolution: "That the affairs of this association be directed by a committee chosen annually; and that the following members constitute the committee for the ensuing year: The Earl of Burlington, Dr. Daubeny, Mr. J. E. Denison, M.P., the Earl of Ellesmere, Mr. W. F. Hobbs, Mr. E. Holland, the Rev. A. Huxtable, Mr. S. Jonas, Sir J. Johnstone, M.P., Mr. T. Kinder, Mr. J. H. Langston, M.P., Mr. T. B. Lawes, Mr. W. Miles, M.P., Mr. P. Pusey, M.P., Mr. W. Shaw, and Mr. S. Thompson." He commenced by expressing the great delight he felt at the formation of this association. He had considered that a stigma attached to England so long as such an association was wanting. The greater attention paid to agriculture, the more evident must it appear that it was dependent on science for success (Hear, hear). It was only incidentally that chemical knowledge could be derived from other societies; an association of this kind was needed in order that farmers might proceed in their operations with certainty. As agriculturists, they wanted to ascertain the constituents of plants, manures, and soils. Much had been done with regard to the two first, through the medium of the Royal Agricultural Society. They had lately been put in possession of many of the constituent ashes of plants; and many farmers had derived great benefit from the detection of adulteration in their manures. As to the constituents of soils, immediately after the formation of the association he availed himself of the assistance of Professor Way, without whose indefatigable industry no result could have been obtained. He resided in a part of the country which was somewhat peculiar as regarded its geological features. His land was situated on a chalk formation; but it was much disrupted; and they all knew that that formation comprised land possessing the highest and the lowest amount of fertility. He then proceeded to state that experiments performed personally by Professor Way had led to the discovery that the lowest portion of chalk in his land contained a high per centage of phosphoric acid, proceeding from animal remains. The result of analyses was to show that marl, extending over a wide district, contained, on an average, 15 per cent. of phosphate of lime, and the fossils embedded in it from 50 to 60 per cent. He had had dug about 50 or 60 tons of this marl at an expense of about 20s. per ton. He was satisfied that the whole range of the chalk formation extending from Folkstone, in Kent, to Petersfield, in Hampshire, and back again to Beachy-head, in Sussex, and also from Flamborough-head, in Yorkshire, to Sidmouth, in Devonshire, and thence to the Isle of Wight, was rich in such fossils as he had mentioned. From communications which he had received, he felt convinced that beds of fossils were very numerous, and that a large supply of native phosphate of lime might be obtained throughout the kingdom.

Mr. H. Whitmore, in seconding the resolution, stated that, having a bad sandy land, he had been desirous of learning how he could cultivate it to the greatest advantage. Professor Way made an analysis of his soil. The result was, that what he had conceived to be clay proved to be nothing of the kind; it contained no alumina whatever. Amongst the soils which he sent to the Professor for analysis, was a sample of a field lying in the neighbourhood of the sandy portion of land, and from the analysis of which he scarcely expected any result. Professor Way informed him that, though his clays were of no value, he had one formation which might be very beneficial. This was the field to which he had referred: a wet meadow which he had always considered of little value; being, no doubt, an alluvial deposit from the river Severn. Here the chemist found a quantity of soil of an alluvial description, containing 17 or 18 per cent. of alumina, the chemical substance which he most wanted (Hear, hear). The deposit was 9 or 10 feet deep, and it constituted for him a mine of wealth, in the very place where it was required. He had no doubt that similar experiments and analyses in other cases would lead to similar results. The association was of vast importance as regarded manures. The adulteration of guano was carried to a frightful extent. There could be no doubt that the quantity used by agriculturists vastly exceeded the quantity imported into the country; it was obvious, therefore, that adulteration was being carried on in the case of that article; and where the price was reduced 10 per cent., the adulteration extended to 20 per cent. (laughter).

The resolution was then agreed to.

Mr. Hobbs proposed the following resolution: "That the subscriptions of the current year be received by J. T. Way, Esq., the chemist of the association; and that compositions, in lieu of subscriptions, be paid to the joint account of Lord Portman and the Rev. A. Huxtable, with Messrs. Glynn, Halifax, Mills, and Co., and that the Secretary be appointed by J. T. Way, Esq." He said he had great pleasure in proposing the resolution, feeling that this society would secure what the practical farmers had long desired, namely, a correct analysis of soils, manures, and vegetable products, at a moderate price. When the existence of the society was generally known, the practical farmers of the country would have no excuse for neglecting to ascertain the nature of their soils, and what manures it would be best to apply to them. He had listened with great pleasure to the remarks of Mr. Huxtable, especially with regard to the application of fish as manure. He was persuaded that fish, when deprived of its watery properties, would at any period of the year prove an admirable manure, and that it might in many cases be made to supersede guano. He had rejoiced to hear the remarks of Mr. Denison; he was convinced that landlords as well as tenants would benefit by this society; in benefits received by the tenantry the landlords could not fail to participate. He had been asked whether he thought the practical farmers of the country would support the institution? He had no doubt they would when they had seen one or two successful experiments with regard to soils and manures, especially if they had security for the investment of their capital.

Sir J. V. B. Johnstone, M.P., briefly seconded the resolution, and observed that he had found a difficulty in obtaining subscriptions in his own neighbourhood on account of the existence of local associations. All merely local efforts must be desultory without this association.

The resolution was then agreed to.

Mr. E. Holland moved the fourth resolution: "That the thanks of this meeting be given to the members of the provisional committee for their services in forming this association." He concurred in the wish expressed by Mr. Denison, that the Royal Agricultural Society would, ere long, connect with itself the Chemical Association. He thought it would be necessary to appoint local agents for the association, through whom samples might be sent to Professor Way for analysis. The mode of paying such agents was a serious consideration; but in other cases the payment of a certain per centage to those who brought grist to the mill, fully answered the purpose, and he did not see why it should not do so in this case.

Lord St. John, in seconding the resolution, said, that having had occasion to send some of his own soil for analysis, he was fully satisfied as to the benefit which the association was likely to confer.

The resolution was then agreed to.

The Earl of Burlington proposed a vote of thanks to the chairman.

The Hon. D. Pelham seconded the motion; and in doing so recommended that the education of agricultural labourers in this country should be conducted in the same manner as in Scotland, where Professor Johnston's little catechism was used in the parish-schools.

The resolution having been carried and briefly acknowledged,

Mr. E. Denison said, at the risk of being out of order, and feeling that if he were so, the departure from order was, in such a case, excusable, he would propose a vote of thanks to the secretary.

Mr. W. Shaw said he had great pleasure in seconding the motion; and he begged permission to make one or two observations. Sir John Johnstone had stated that he had found a difficulty in obtaining subscriptions on behalf of the association in his neighbourhood, because farmers' clubs already existing there employed a chemist. Instead of regarding that circumstance as an ill-omen for the association, he considered it a favourable one; for, where the spirit of chemical inquiry existed, the association would, in proportion as its benefits became known, obtain the greatest amount of support (Hear, hear). An observation had been made with respect to prejudices existing in the minds of farmers with reference to scientific experiments. Nothing could be more likely to remove such prejudices than the operations of such an institution as this. His conviction was, that farmers were not prejudiced on such subjects in the first instance; their prejudice had arisen from imposition of which they been made the dupes, and from statements of extraordinary results, which, though published in books when tested by them, had proved to be without foundation (Hear, hear.)

The motion having been unanimously agreed to, was responded to by the secretary; after which the meeting separated.

THE HISTORY, NATURE, PATHOLOGY, AND TREATMENT OF THE EPIDEMIC PLEURO-PNEUMONIA.

BY JAMES MERCER, M.D., F.R.C.S.E., EDINBURGH.

When we consider the vast number of cattle that are annually required for the consumption of the United Kingdom, averaging generally 1,600,000, exclusive of calves and the dead market, we cannot but be struck with the absolute necessity of attending to every circumstance relating to the breeding, management, rearing, and feeding of cattle, so as to enable the country to produce within itself, and without foreign aid, a supply equal to so large a demand. To the great losses necessarily entailed on breeders and graziers generally by the occurrences of accidents which are apt to befall their cattle, there is another and very important source—that of the occasional prevalence of epidemic disease.

It is well known that veterinary schools owed their origin chiefly to the ravages of epidemic disease among cattle, and that "they were established for the express purpose of teaching a more systematic knowledge of the management of sheep and cows." This noble attempt, however, has been comparatively frustrated by an almost total neglect of the special object for which these colleges were originally instituted, by neglecting even to mention the subject of cattle diseases in their prelections, and devoting the whole of their attention to the horse.*

It is also well known that, even at present, there are two great sources of the mortality of sheep and cattle, and the loss of much agricultural property; and it is difficult to say which is the worst—the ignorance and obstinacy of the servant and the cow-leech, or the ignorance and supineness of the owner. To these may be added another source of mortality, and that perhaps the most important of all—the mystery which clouds the minds of cattle men and cow-leeches generally in reference to the real history and causes of epidemic zootic diseases. By the generally adopted opinion, that the primary exciting cause of such ravaging epidemics is dependent on the existence of some hidden and mysterious agency over which they can have no control, their minds become paralyzed, and no efforts are made to attempt any method of treatment, leaving their valuable stock to proceed to fatal destruction, as if they were spell-bound by some enchantment. But a little more intelligence, and a faithful dependence on the symptoms of the disease exhibited, that they are not the result of any "mysterious agency," but the results of "natural causes" that are equally within the power of active and early treatment as that of the simple and perfectly understood form of diseases generally, would inevitably dispel such delusion.

It is well-known that epidemic zootic diseases have, more or less, frequently ravaged many countries from the earliest period of history. During the past century they have made havoc in all the kingdoms of Europe; and none have been so direful in the extent of their ravages as that formerly denominated epidemic catarrh, murrain, and at present pleuro-pneumonia. From the earliest accounts of this disease we find that the predisposing cause of it was generally attributed to marshy and woody districts, or where perfect under-draining did not exist, combined with exposure to sudden change of the atmosphere and a half-starved method of feeding. The influence of the above-named predisposing causes are allowed their full support by the agriculturists of the present day; but to these must be added others, and perhaps more important ones, viz., the crowded state of our dairies and cattle-houses, and the quantity of filth that is carelessly left for a considerable time before it is removed; add to these the universal want of ventilation and complete drainage, by the absence of which putrefactive fermentation is rapidly produced, and the organic gases and compounds saturate the atmosphere, which animals are compelled to inhale for weeks and months together. No wonder then, if disease of the simplest kind be instituted, that its ravages must be great, arising entirely from the vitiated constitution on which it acts at its first onset. It is more a wonder that it is so small. It has been already stated that a "deep and hidden mystery" has hitherto, and even at the present time, been supposed to envelop the *exciting* cause of the disease; or, in other words, that it is consequent on some poison or other *specific miasm* existing in the air, and which *miasm* produces a *specific effect* on the animal structure, over which the whole ingredients of the pharmacopœia or the skill of the hippiatrist has no control; and consequently, in the opinion of the owner, if the disease has become fully developed so as to render the animal unmarketable, it is usually left

* Youatt "On Cattle," p. 2.

to its fate. It is very unfortunate that this opinion is so generally believed and acted upon both by the owners and the veterinarian; and I have no hesitation in stating that it has been so long and so ridgidly acted upon that myriads of cattle have been allowed passively to go to destruction. Unless, therefore, a change of opinion, as proved by enlightened intelligence and an approved experience, takes place, it cannot but happen that a continuation of this opprobrium of science must inevitably remain. Let the cattle-man be made confident that the exciting cause of the disease is not specific in its nature, but is the result of a simple cause to which all the structures of the animal frame are exposed, and which can produce in them all those diseases to which mortal "flesh is heir to;" that the majority of such diseases are well known to be under the direct control of remedies promptly and efficiently applied, and that they can thereby be made perfectly recoverable; then it will follow that, if the cattle-man be intelligent enough to detect the immediate onset of this hitherto frightful scourge, the success of its treatment will be such as to remove it from its present dreadful condition, and place it in the category of our simple forms of disease; that if the cattle-owner and the veterinarian still cling to their former notions as to the specific and infectious nature of the disease, no attemps, however made, will remove the incubus from their understanding, and the scourge will still be permitted to cause its direful ravages.

Before proceeding to the consideration of the symptoms, pathological appearances, and treatment of the present epidemic, pleuro-pneumonia, I shall premise with a short description of the healthy tissues of the lung, the special organ affected, in order that the symptoms shown by the disease and the post-mortem appearances may be more easily understood.

The structures that enter into the formation of the lung comprise two distinct sets of vessels—those carrying on the *function* of the lung, and those for its *nutrition*. To the first of these I shall only direct attention, as it is essentially in them that the morbid ravages of the epidemic are formed.

The functional vessels of the lung are three in number. The *aërial* vessels for conveying the surrounding atmosphere into the ultimate ramifications of the air-cells. This great vessel, the windpipe, may be likened to a tree, the stem of which is the trachea, the larger branches the bronchi, and the leaves the air-cells. These air-cells form the greater part of the structure of the lung; around their grape-like extremities, the capillary plexus of the pulmonic vascular systems ramify most abundantly; and their interior surface is lined with a fine and extremely sensitive mucous membrane, derived from the great gastro-pulmonary membrane. The functions of these air-cells are to contain a a large quantity of air, which, surrounding the capillary vessels filled with *impure venous blood*, these latter vessels are, as it were, bathed by the aërial fluid, and by its means the *impure venous blood* is changed in its properties and converted into *pure arterial blood*. The second set are the pulmonic venous system, whose function is to carry the impure venous blood from the right side of the heart to the air cells. There the carbonic acid which is contained in the venous blood of the body generally, is secreted from it by the air-cells, and expelled from the system by the process of expiration. Another change at the same time takes place —the absorption of the oxygen of the atmospheric air in the air-cells, on which the blood, becoming oxygenated, is converted into pure arterial blood.

This pure blood is conveyed by the third set of vessels to the left side of the heart, thence to be circulated in every part of the body for the nourishment thereof, and to be again returned as impure venous blood. The whole of these systems of vessels are bound together by interlacing filaments of cellular tissue, which bind them together to form the lung. Thus formed, the entire lung is invested by a general membrane of a serous nature—the pleura; and which, being reflected over the interior of the walls of the chest, enables the lung to play freely therein in the processes of inspiration and expiration.

These structures, with the nutrient vessels, form the tissues of the healthy lung; and the pathological effects which take place in them are thereby arranged under three forms.

1st—Inflammation of the mucous lining of the bronchial tubes and air-cells—bronchitis.

2ndly—Inflammation of the pulmonic vascular substance, or the parenchyma of the lung—pneumonia.

3rdly—Inflammation of the investing serous membrane of the lung—pleurisy, or inflammation of the chest.

Bronchitis.—This form of inflammation is the first of the series of the pulmonic tissues that are effected and induced by the direct application of those simple causes that produce inflammation in the other structures of the body. The symptoms indicating its onset are always very insidious, the disease seldom developing itself until subsequent ravages have been produced. When the disease is present, the animal becomes dull and languid, with great depression and apparent debility; the cud becomes lost; the coat staring; coldness in the extremities comes on; the roots of the horns, the ears, and the inside of the mouth become cold; there is dulness of the eye; increased breathing;

cough—at first short and soft, then loud, harsh, rough, and prolonged; slight discharge from the nostrils; a watery eye; and the pulse more frequent, but full and soft. All the secretions are checked.

Pneumonia.—If these symptoms are neglected, and no treatment be adopted in this, the only stage of the disease in which immediate benefit can be obtained, the substance of the lung becomes rapidly engaged, and thereby developing more fully the general febrile symptoms. The ravages in the pulmonary substance rapidly extend, until an entire lobe, or even the whole lung, may be involved. The essential symptoms of pneumonia then become developed, and all the symptoms appear more complicated. The breathing becomes weaker, slower, and stifled, as if some weight pressed on the lung, impeding its free and full expansion; the cough is short and stifled, often accompanied by a prolonged grunt; the animal looks wistfully to the affected side, as if instinctively pointing out the site of the disease; the flanks are heaved and tucked up, so as to aid respiration; the pulse becomes very small, oppressed, and weak, as if the vessel that was felt had not its full contents, indicating that the heart propelled it with difficulty, and was itself oppressed and overloaded from the excessive congestion of the pulmonary tissues; all the general symptoms become more aggravated and complicated, and the disease proceeds rapidly to its fatal termination.

Pleurisy.—If the disease extends to the pleura, the symptoms again become much changed, indicating pleurisy. The pulse becomes more rapid, small, hard, and wiry; the breathing stops short and is only partially finished, and is immediately followed by a short, catching cough; the head is also turned to the affected side; and if the clenched fist be forcibly thrust against the side of the chest, the animal immediately evinces severe pain, and a sudden short cough is instinctively produced. The general symptoms are now developed to their greatest severity; but the ravages now extending to every tissue of the lung, the disease proceeds with the greatest rapidity to its fatal issue. The characteristic symptoms of these three forms of disease may be thus arranged:—

In Bronchitis.—Breathing is quick and free.
Cough, at first short and soft, then loud, harsh, rough, and prolonged.
Pulse, frequent, but full and soft.

In Pneumonia.—Breathing, weaker, slower, stifled.
Cough, short and stifled.
Pulse, small, weak, and oppressed.

In Pleurisy.—Breathing short, and only partial.
Cough, short, and catching.
Pulse, rapid, hard, and wiry.

The post-mortem appearances, in almost all my cases of dissection, varied much in their extent of destruction of the pulmonary tissues, according to the stages of the disease which had proved fatal. Where the bronchitis alone, or only complicated with simple pneumonia, proved fatal, the investing membrane of the tongue generally presented considerable evidence of disease of the cutaneous covering along its surface. It was raised up in the form of detached scales, and very rough over its entire surface; along its sides, vesicles and ulcerated spots were frequently found, similar to those accompanying gloss-anthrox or blain. The tongues of many of the carcases brought to the market were in this state of disease, but they were immediately put out of sight and removed by the sellers. The lining membrane of the gullet, the stomach, and the intestines, were inflamed in patches, and here and there patches of ulceration were found. The lining membrane of the trachea, bronchi, and the large air cells that could be easily traced, were highly inflamed; the tubes were filled with frothy, purulent, and bloody matter; and where pneumonia had been present, the morbid appearances of that form of disease were also found. These consisted of pulmonary vascular congestion around the air-cells, giving rise to bloody congestion of the parenchyma. If an incision was made into it in this stage of the disease, the blood poured out from the cut surfaces of the incision. If the disease had been further advanced, the effusion of a new morbid matter was found in the substance of the lung, causing hypatrophy or hepatisation of it, and consequent obliteration of the air-cells. Sometimes purulent matter was found diffused through the lung, at other times collected into absesses or vomicæ, that often communicated with the bronchial tubes or the cavity of the pleura. When pleurisy also occurs, the effusion of plastic lymph and puriform matter becomes rapidly formed, and fills up the cavity of the chest. The surface of the lung was also coated with this lymph, and frequently recent adhesions were found between its free surface and the sides of the chest. The cavities of the heart, in cases of complicated pleuro-pneumonia, were always found congested with grumous blood; and the vessels of the brain were in a similar state.

Treatment.—The old adage, "Prevention is better than cure," could not be more efficiently illustrated in its fullest extent than in relation to pleuro-pneumonia, or any other epidemic or sporadic forms of diseases, to which our frail humanity is so liable; and from our daily experience at present, when inflammatory diseases and dangerous fevers are ravaging unlimitedly amongst us, we invariably find that where no means of prevention, or but partly so, had been adopted, the cure of

these diseases became impossible, and the mortality of the scourge has been really frightful. What is therefore true in the treatment of human, must be also true in animal disease. The difference between such, in every point of view, is but trifling, though many think otherwise who have had but a superficial degree of knowledge of the structures of man and of the brute creation, and who are thereby incompetent to form any opinion.

"Drink deep, or taste not the Pierian spring."

The improvements which the poor Law Commissioners recommended to the Legislature, on the sanatory condition of the labouring population of Great Britain, would prove equally beneficial, if the adoption of them were rendered compulsory in respect to the labouring cattle of the country. The great benefits that have been obtained by the labouring poor by the improvement in the sanatory condition of their dwellings, is a matter of surprise to all; and would such not unquestionably follow, if the same means were used to improve the byres of our dairies, and the sheds of our cattle-yards?

In referring especially to the treatment of pleuropneumonia, every precautionary means for its prevention should be had recourse to; such as efficient ventilation, a comfortable atmosphere, perfect drainage, cleanliness, and good feeding. Without these, the disease will always be found predominant. When the disease does occur in any cow-house, characterized by the symptoms I have enumerated, immediate and decided treatment must be had recourse to. Bleeding should at once be adopted; and this to be beneficial, must be carried to such an extent as will make a decided impression on the circulation, so as to check the further progress of the disease. If this be effected, and the symptoms become moderated, the bleeding must *not* be again employed, as irremediable debility would rapidly follow. Promiscuous bleeding, "right and left," is to be by all means avoided; for without a careful analysis of the symptoms and of the stage of the disease that is present, the rapid fatality of it after the bleeding will at once show its great impropriety. After the bleeding, a full saline purge should be exhibited.

One pound of Epsom salts, one drachm of tartar emetic, and two or three drachms of ginger, mixed in water should be given, and repeated until free purgation has been produced. When this has been accomplished, then let there be regularly exhibited, at stated intervals, an anodyne diaphoretic mixture, consisting of half an ounce of laudanum, two drachms of tartar emetic, and two pints of water. This ought to be repeated every four or five hours, according to the state of the symptoms, so as to keep up the diaphoretic effect. The animal should be carefully removed from its companions, and placed in a well ventilated and comfortable loose box, and free from sudden atmospheric changes. Let it be covered with a warm woollen rug, to prevent the too rapid evaporation of the sweat, so as to chill the animal. Warm bran mashes, and tepid meal and water, should be left beside it, and a little of any slightly stimulating food that may be at hand. Should symptoms of debility remain, then tonics are required, beginning the stimulation very cautiously at first. The common bitter tonic, chamomile tea, is perhaps the best and safest at first, but as the strength increases, stronger medicines must be used. Infusions of gentian, columba, cascarilla, &c., are those chiefly employed.

I shall now conclude with a few impressive remarks, deduced from the foregoing statements, in reference to the secret of safely and successfully attempting to cure this hitherto frightful malady. The responsibility rests on three individuals: the owner of the cattle, the servant or cattle-man, and the veterinarian. If the owner will but improve the sanitary condition of the dwellings of his property, he will do much to prevent the occurence of the disease. If the cattle-man be intelligent, and by the slightest change in the condition of the animal he detects the first onset of the disease, he fulfils half the cure. And if the veterinarian be confident and decided in his treatment, and his mind is not blinded by the fancies of infection, the treatment proposed will be found frequently successful, and this wicked scourge will soon be made to take its flight, and become no more the dread of e honest and industrious agriculturist.

Since the foregoing remarks were written, I have been fortunate enough in obtaining a perusal of the first Report of the Metropolitan Sanatory commissioners of London,* I am induced thereby, to add a few further remarks as to the absolute importance of "preventing the occurrence of the disease, by the adoption of the proper means for improving the sanatory condition of our dairies and cattle-sheds.

"Nothing can be more clear and convincing than the facts and evidence brought forward in this report, to show the close connexion between dirt and disease, the intimate alliance between foul drains and fever.

"There is a singular apathy on the part of the general public as to sanatory reform—an apathy, out of which existing fever and threatened cholera

* See also an admirable paper on "Sanatory Reform in Edinburgh," in the *Scotsman* of December 8th, 1847.

can scarcely shake them. It is a matter of universal experience, that the most powerful enemy of sanatory improvement is to be found in paltry local impediments, in the shape of private interests and vested rights. These, however, ought not to stand in the way if anything is to be done, and for overcoming them, the friend of sanitary reform must be prepared."

It is an old proverb, and a good one, that "What is everybody's business, is nobody's business,"—and this is too truly the case in reference to sanatory reform, whether applied to the inhabitants of cities, towns, or villages, and is also equally applicable to our present subject, the sanatory improvement of the agricultural stock of the country. The commissioners appointed by government to draw up the above-named report, seem to have been fully alive to this trite saying. If they had recommended the constitution of a sanatory board on a footing similar to those at present existing, which consist of a number of distinct boards from different districts, each having its own rights and interests, it would have been again found impossible to prevent another clashing of interests, which must have inevitably ended as before, in nothing being done to forward the special objects of their appointment. Instead of this, or a number of independent and uncooperative boards, they have recommended *one central board* of twenty-three commissioners, and consisting of persons best known for the interest which they have long taken in sanatory reform, as well as for the scientific acquirements which they possess of the theory and practice of the remedies which it would be necessary to employ. The importance of this step might be sufficiently inferred from the simple fact, that these twenty-three commissioners will possess the authority that was formerly invested in the sum-total of six hundred individuals.

"Thorough draining is the root and essence of sanatory reform; without it, the best exertions for cleanliness, and the most arduous endeavours for the preservation of health, lose all their force and value."

The produce of agricultural property may be considered as essentially consisting of two distinct kinds, which I shall denominate, for illustration—first, the cereal of grain crops; and secondly, the grazing and fodder crops, or the cattle crops—and, connected with the latter, the comparative value of the cattle stock.

It would be considered a useless and unnecessary repetition, were I to say one sentence in reference to the wonderful success which has universally been found to follow well-directed efforts to increase the fertility of the soil by the adoption of thorough draining, This is well known to every person possessing even a superficial knowledge of the science of agriculture. I shall therefore conclude with one quotation—

In grounds, by art laid dry, the aqueous bane,
That marr'd the wholesome herbs, is turn'd to use;
And drains, while drawing noxious moisture off,
Serve also to diffuse a due supply.

It cannot but be evident to one who takes a true view of the comparative importance of the value of the cereal crops and that of the cattle stock, that, at first sight, the former appears to be the more important of the two. Such, indeed, is the general feeling amongst farmers, throughout the United Kingdom. It is that part of their agricultural property, on the produce of which they chiefly depend for the payment of their rents. And, further, from the improvements which have followed draining, and a more perfect system of agriculture, the farmer looks upon his grain crop as his standard one. The confidence which he reposes in it is such, that after tilling the ground in a skilful manner, he implicitly trusts to have at least a general average of crop produced, both in quantity and quality; and in this he is seldom disappointed. But is very different with the cattle stock. It is property of the most precarious tenure, and, therefore, it should be most highly valued by the farmer. But has this ever been the case, or is it so at the present time? I fear not.

From what I have stated in the former part of this paper, and from what I have here appended, I have adduced sufficiently important reasons to show that a greater value ought to be attached to the more efficient management and feeding of the cattle stock, than has hitherto been done; and if the same skilful endeavours that have been adopted to improve the soil and to produce an increase of crop, would be employed in effectually improving the sanatory condition of the cattle stock, infinitely less ravages by disease, and less loss generally, would result to the farmer. By adopting the well-known means for preventing the origin of disease from dirt, damp, bad ventilation, and worse feeding, I have no doubt that the casualties which have hitherto attended the cattle stock will be as far removed, and the results will be as prominently successful, as those which have followed the improvement of the soil.

Then it will be that the farmer will see reason to value his cattle stock more highly than at present, and that he will as confidently look forward to an average produce on this stock, as he may, at present, look on the grain crop.

It may very naturally be asked by the tenant-farmer, whether or not it must be he or his landlord on whom the duty devolves of being at the expense of improving the sanatory condition of the farm tenements. This is easily answered—the nature of

the tenure of the lease. In the greater part of Scotland, leases usually extend to nineteen or more years : and were all tenant-farmers to possess leases of this duration, I feel assured that an intelligent man, assured of the benefits that would infallibly accrue to him by the greater security of his cattle stock, and consequently by a greater produce therefrom, he never would grudge the expense of the outlay of money in effecting a complete change in the sanatory condition of his onstead. It must happen, thereby, that as great an increase in the value of this agricultural property will take place during his lease, as would have accrued to him had he confined himself entirely to the improving of the fertility of the soil. Whoever of the two, having a vested interest in the property, may undertake the improvements mentioned, let there be only one dictator appointed, with full powers to carry out, in all particulars, the necessary improvements, and the profits resulting therefrom will be equally available to the landlord as to the tenant.—Journal of Agriculture.

MANUFACTURE OF CHEESE IN THE UNITED STATES.

At the January meeting of the New York State Agricultural Society, 1848, Mr. Alonzo L. Fish, of Litchfield, Herkimer County, received a premium of 50 dollars for an account of experiments made by him in the manufacture and management of cheese. Mr. F.'s valuable essay (as it may be called) is embodied in the elaborate report of the committee appointed by the society to examine the claims of competitors under this head, and will be found in the volume of "Transactions" for 1847, when published. We think the following extracts from Mr. Fish's remarks will be read with advantage by those of our readers who either are, or expect to be, engaged in cheese dairying.

"Having been personally engaged in 1845 in some 60 dairies, which were located in thirteen towns and four counties, and more or less in the same manner the past two years, I have observed a marked difference in the capacity of soils for producing herbage under different modes of culture, and the various conditions and treatment of cows affecting their capacity for milk, both as regards *quality* and *quantity*. The inconvenient and improper fixtures, in many instances, for making and curing cheese which are to be found, all unite in convincing me that any set rules for making cheese would not be practicable, even with the most proficient cheese-maker; because,

"In the first place, milk is a fluid very liable to be varied in quality by impure water, by damp and unventilated stables, change of diet, excess of feeding, excitement of temper, irregular milking, salting, &c., which destroy its susceptibility to produce like results.

"2nd. Cheese when pressed and exposed in a *curing process* is no less easily affected, and is equally liable to be varied in texture and flavour by size of cheese, exposure to excess of heat, bad air, &c., the effect of which I shall hereafter notice. There are, however, leading principles which form the basis of operations, and should be closely adhered to *in all cases* in the process of manufacturing cheese. *Salt, rennet, heat,* and *pressure* are the principal agents used in converting milk into cheese; the flavour and texture of which is determined by their proportionate use. Their proportion is varied by different dairymen, according to their notions of propriety, as best adapted to their fixtures, experience, &c. Hence arise the great inequalities in dairies; in the same neighbourhood, and even in the same *dairy-rooms,* may be found as many different qualities of cheese as there are of fruit in an apple orchard. Some of these are matured at an early period; while others mature later, and are unsuited to the same market.

"Much of the cheese being contracted for before it is made (in the early part of the season), both buyer and maker are liable to be disappointed, in the cheese being suited to the market for which it is designed; destroying the confidence of purchasers, and injuring the interest of the dairymen. It is therefore necessary that makers should have sufficient knowledge of the science to determine the result of their practice, which cannot be learned from verbal instruction. It is by *practical experience and close observation only* that the maker can learn to adapt his practice to the frequent and extreme changes to which our climate is subject, varying the quality of the milk and materially affecting cheese in the process of curing.

"The evening's and morning's milk are commonly used to make one day's cheese. The evening's milk is strained into a tub or pans, and cooled to prevent souring. This is done by running water through a vessel set in the milk, or setting pails filled with cold water into the tub, and stirring till cool; but little cream will rise over night.

"The cream is taken from the evening's milk and kept till the evening's and morning's milk are put together, and warmed to receive the rennet; this is often done by heating a part of evening's milk to a temperature that will warm the whole mass.

Both are objectionable; *because the natural affinity which is necessary to preserve between the constituent parts a perfect coherence* is destroyed by a portion of the milk being overheated. It is better to warm the whole mass in a manner that will produce an *equilibrium of heat*, which is best done by placing the vessel containing the milk within a large vessel, with two inches under the bottom and one inch of space at the sides, into which space water may be put to cool the milk, and into which steam may be let, to warm the milk and scald the curd. The more water surrounding the milk, the more uniform will be the heat. The cream, if added (which is generally done), is best incorporated with the milk by putting it with twice its quantity of new warm milk from the cow, and add warm water to raise its temperature to ninety-eight degrees. Stir it till perfectly limpid, add cream to milk, and then put in rennet, that the same stirring may mix both at once with the same mass. If milk is curdled below eighty-four degrees the cream is more liable to work off with the whey. *An extreme of heat will have a like effect.*

"Curdling heat is varied with temperature of the air, or the liability of the milk to cool after adding rennet. A fine cloth spread over the tub while the milk is curdling will prevent the surface from being cooled by circulation of air. No *jarring of the milk*, by walking upon a springy floor or otherwise, should be allowed while milk is curdling, as it prevents a *perfect coherence.*

"Rennet.—Various opinions exist as to the best mode of saving rennet, and that is generally adopted which is supposed will curdle the most milk. I have no objection to any mode that will preserve its strength and flavour, so that it may be *smelt* and *tasted* with good relish *when put into the milk.* Any composition not thus kept I deem unfit for use, as the coagulator is an essential agent in cheesing the curd, and sure to impart its own flavour. The rennet never should be taken from the calf till the excrement shows the animal to be in perfect health. The stomach should be emptied of its contents, salted, and dried without scraping or rinsing, and kept dry for one year, when it will be fit for use. It should not be allowed to gather dampness, or its strength will evaporate. To prepare it for use:—Into ten gallons of water (blood warm) put ten rennets, churn or rub them often for twenty-four hours, then rub and press them to get the strength; stretch, salt, and dry them as before. They will gain strength for a second use, and may be used when the weather will admit of soaking them to get the full strength. Make the liquor as salt as it can be made; strain and settle it, separate it from sediment (if any), and it is fit for use. Six lemons, two ounces of cloves, two ounces of cinnamon, and two ounces of common sage are sometimes added to the liquor, to preserve its flavour and quicken its action. If kept cool in a stone jar it will keep sweet any length of time desired, and a uniform strength can be secured while it lasts. Stir it before dipping off to set milk; take of it enough to curdle milk *firm* in forty minutes. Squeeze or rub through a rag annatto enough to make the curd a cream colour, and stir it in with the rennet. When milk is curdled so as to appear like a solid, it is divided into small particles, to aid the separation of the whey from the curd. This is often *too speedily done* to facilitate the work, but at a *sacrifice of quality* and *quantity.*

"The three *indispensable agents, heat, rennet, and pressure,* rightly applied, must keep pace with each other in effect; the two former operating to subdivide, the latter to aid cohesion, by bringing the particles of a sameness closer in contact. This should be *skilfully* and *studiously* applied in a mild way, according to the capacity of the curd to receive it. The less friction in working the curd, the less waste. If *heat is raised too fast*, or commenced while the curd is too young, the effect of the rennet will be checked, and decomposition will not be complete, and will result in a leaky cheese.

"This often happens when steamers are used in small dairies. Heat may be raised in scalding, *to keep pace with rennet*: if rennet is quick, heat may be raised quick; if slow, heat must be raised slow and held longer. Scalding heat may be carried from ninety-six to one hundred and four degrees, according to the size of the cheese and temperature to which the cheese is exposed. During the process of scalding, the whey and curd should be kept in motion to prevent the curd from settling and sticking together, as separating it is attended with great labour and waste from friction.

"When the curd is cooked so that it feels elastic and will squeak when chewed with the front teeth, it is separated from the whey to receive salt. This is done by dipping it into a strainer over a basket or sink, or drained off and salted in the tub; either may be done without adhering in lumps, by stirring it in a small portion of whey till cooled to ninety-four degrees. This is the most critical part of the process, where cheese-makers are most likely to err, as the portion of salt retained in cheese after pressing will be in proportion to the capacity of curd to receive it when added. At a particular period and temper of curd, when draining off whey, it will absorb salt freely; and after being thoroughly mixed and packed up for a few minutes while warm, it will be evenly shrunk and cleansed by salt and whey, and will press out freely. But if the curd is *not well cooked*, or if it is cooled too fast in draining off whey, it will acquire

a degree of stubbornesss, prevent the absorption of salt to shrink and cleanse, and *no amount of pressure* will be sufficient to drive out the fluid.

If curd is not worked even, the larger lumps will not be cooked enough, or the lesser too much (like large loaves of bread and small biscuit baked together in one oven); hence the cheese is left impregnated with the elements of fermentation, which increase on being exposed to heat till the cheese is sufficiently swollen or huffed for each constituent to occupy a separate space in the same shell or rind. The fluids are first attracted together by affinity, forming small cavities, in which they remain *unaffected by salt*, become fetid, and generate an unpleasant odour, which is a fair proof of the quality of rennet used. Curd should be salted warm, as it is then more absorbent; and it should be thoroughly cooled before putting it to press, to suppress the combined action of *heat and rennet*. The quantity of salt required varies with the condition of the curd, size of cheese, amount of heat to which the cheese is exposed in curing, and market for which it is designed.

"A well-worked cheese, from fifty to one hundred pounds, requires one pound of refined salt to forty pounds of curd to remain in the cheese after it is pressed and exposed to a temperature of from seventy to eighty degrees. This may be varied from two to four pounds to the hundred, according to the texture of cheese required; small cheese requiring less, and large cheese more.

"A degree of moisture is necessary in cheese for a malleable texture, but this should not be from *animal fluids retained in the curd*. A high salted cheese immediately exposed to high temperature becomes sour, hard, dry, and crumbling; the same exposed to a cool, damp atmosphere retains sufficient moisture to be soft, yet solid. A cheese light salted in a high temperature will cure quick, become porous, huffy, and stale. *Curd from hay-milk* requires much less salt than that from grass or grain feed, as it is poorer, and will retain salt like lean meats. The richer the milk, the more salt is required to control the animal properties, and the *less absorbent the curd*, the pores being filled with the finer buttery particles.

"More salt is required in hot weather also, to overrule the *combined action of rennet* and heat, *neither of which which will be effective alone*. When curd is ready to press, it is important *to dispossess those decomposing agents*. The gastric juice (or coagulator) is a *fluid*, and works off with the animal fluids in whey; and the only way to get rid of it is to work the curd down *fine and solid, and work the whey all out*. Then cool the curd thoroughly before pressing, and the cheese will be solid and keep its place; but if the whey is not all out, the decomposer is yet on hand, continues its action (aided by heat) till *an equilibrium of chemical action is destroyed in the cheese*, and the fluid properties leak out in fetid whey and oil, leaving it a rank and worthless article. *In short*, the proper method of using salt must be arrived at by a close observation as to its *chemical combination* with the *constituent properties* at different ages of the cheese with different sizes, heat, dampness, &c. This, although an essential point, has not been sufficiently determined by chemical analysis to be reliable."—American Cultivator.

MR. BATSON'S SYSTEM OF AGRICULTURAL TRAINING.

The elevation of the condition of the labouring class is precisely one of those things which may be greatly advanced by individual exertion. We need hardly say that it is for the advantage of the agriculturist that his labourers should be intelligent; yet it is quite certain that those labourers are less intelligent than any other section of the working classes, except the lowest in the towns. In very many cases the former have the charge of costly machinery, constructed upon scientific principles, and in the main only to be *profitably* worked by intelligent workmen; in all cases they have to pursue the great art of agriculture, which depends, not less than any other, upon the knowledge of correct principles; and in each instance the loss from unskilful labour falls upon the farmer himself. Since education, to deserve the name at all, must include moral and religious training, and since the result of that training in the majority of cases is to make men honest, industrious, and upright, it is for the interest of a man whose property is necessarily exposed to depredation, and whose work must be done faithfully if he is to gain a profit, to see that his labourers have such an education. The system of parochial schools, though very useful so far as it goes, neither makes the youth generally intelligent, nor even prepares him in any sense for the labours by which he is to live.

Our friend, Mr. Batson, of Kynaston Court, in this county, has adopted a plan which is free from these defects, while it possesses all the advantages which have hitherto been deemed incompatible with general education. Allusions were made to the subject at the last meeting of the Herefordshire Agricultural Society, by no less an authority than Mr. Mechi, who expressed his warm approval of Mr. Batson's plan, and his conviction that it would continue to succeed. Deeming that very much good would ensue if the example were to be generally followed by agriculturists, we have obtained from Mr. Batson the following description of his system,

which will be read, we doubt not, with great interest:—

DEAR SIR,—Agreeably with my promise, I forward you some account of the system I have adopted with the boys on my farm—a system which, I have much pleasure in saying, has realized my most sanguine expectations.

It is now nearly three years since I first formed a gang of boys, taking them merely as daily labourers, and paying them at the rate of 3s. per week in winter, and 4s. per week in summer; but, finding I could make no certainty of their attendance, and that there was considerable difficulty in adopting a regular system of discipline, owing to the want of education and *bad management at home*, I made the necessary accommodation for the reception of twenty boys on my premises, about fifteen months since, and took them under my own care entirely for a term of four years—boarding, clothing, and educating them in lieu of their daily labour on the farm—their ages averaging between nine and fourteen years.

The system that I adopted was this:—Each boy was to be provided with two suits of clothes—one for working in and the other for better use—with, also, a complete stock of linen, shoes, &c.; and at the end of four years I send them back with a like equipment.

The working hours are from six till six in summer, and during the winter they work while it is light.

The meal times are at 9 o'clock, when they have half an hour for breakfast; at one o'clock, an hour for dinner; and at six o'clock, when they also have half an hour for supper; and the evenings are spent in education until nine o'clock, when prayers are read, and they retire to rest.

The food consists of bread and milk, or bread and broth, for breakfast; bread, meat, and vegetables, for dinner; and bread and cheese for supper; with the addition of coffee and pudding on Sundays. According to the rule universally observed on my farm, *no beer or cider is allowed, excepting during the hay and corn harvests.* The labour consists of the general farm work; but I may more particularly observe the planting or dibbling of wheat, and other corn and root crops, and the hand-hoeing of corn, turnips, &c. The evening education is that of reading and writing, arithmetic, &c., and such religious and other instruction as time and opportunity will admit; in which, as well as their daily labour, they are superintended by a young man for the purpose, who was four years at the Woburn National School, and six years at the Duke of Bedford's farm, where he also worked in a gang; to which I may add, that I make it my duty to attend personally each evening to assist.

The enclosed calculations will show the cost of clothes per year and per week, and the cost of food per week, attendance, &c.:—

CALCULATION OF CLOTHES, MAKING, AND ATTENDANCE: TWENTY BOYS FOR ONE YEAR.

	£	s.	d.
34½ yards of moleskin, at 1s. 2½d. per yard	2	1	8¼
44½ yards cord, at 11d. per yard	2	0	4½
3 yards of canvas, at 7d. per yard	0	1	9
3 gross of buttons, at 1s. 6d. per gross	0	4	6
1½lbs. of thread, at 2s. 10d. per lb.	0	4	3
160 yards of calico, at 3d. per yard	2	0	0
3½ dozen pairs of stockings, at 9s. per dozen	1	10	0
Shoes and mending, per contract	10	0	0
Making 20 suits, 50 days, at 2s. 6d. per day	6	5	0
Mending, say 25 days, at 2s. 6d. per day	3	2	6
20 pairs of braces, at 6d.; 20 handkerchiefs, at 6d.	1	0	0
78lbs. of soap, at 5d. per lb.	1	12	6
20 caps, at 2s.; 20 ditto, at 1s.	3	0	0
20 smock frocks, at 4s. 6d. per frock	4	10	0
Attendance	25	0	0
	£62	12	6¾

Being £3 2s. 7½d. per boy, per year; or 1s. 2½d. per week. This calculation does not include the person who works with the boys.

TWENTY BOYS' KEEP PER WEEK,

taken at average market prices, as per amount consumed.

	£	s.	d.
3 bushels of wheat flour, at 7s. 6d. per bush.	1	2	6
9½lbs. of cheese, at 5d. per lb.	0	3	11½
1½lbs. of treacle, at 4d. per lb.	0	0	6
3½lbs. of dripping, at 6d. per lb.	0	1	9
35lbs. of fresh and salt meat, at 6d. per lb.	0	17	6
1½ bush. of potatoes, at 6s. per bush.	0	9	0
3 oz. of coffee, at 2s. per lb.	0	0	4½
	£2	15	7

Or, 2s. 9¼d. per week, per boy.

Each boy's keep per week	2s.	9¼d.
Each boy's clothes per ditto	1s.	2¾d.
Total expense for each boy per week	3s.	11¾d.

I shall now proceed to show *some* of the advantages derived from the system, and, in the first place, I may mention, as a general rule, that *their work is much more carefully done than any man can do it, working by the piece, at the prices usually given*, and as shown by annexed statement.—

COMPARATIVE VALUE OF BOYS' LABOUR, WITH PRICES PAID FOR JOB WORK.

BOYS.	MEN.
* Wheat planting, 6 or 7 boys at 8d. per acre, 4s. 8d.	Not done in this county.
Wheat hoeing, 6 boys at 8d. per acre, 4s.	Men per acre, 4s.
Turnip hoeing, 5 boys, at 8d. per acre, 3s. 4d.	Do., 6s. 6d. to 7s.
Ditto, second time, 3 boys, at 8d., 2s.	
Mangold wurzel, 6 boys and 1 man plant 5 acres per day, say 1s. 3d. per acre	Do., 3s.
Cleaning and heaping swedes, 6 boys, at 8d. per acre, 4s.	Do., 6s.

You will perceive that this statement is in favour of the boys very considerably.

In planting corn there is a considerable saving of seed (which will of course vary according to the idea of the farmer, as to quantity required); the seed is *all in the ground*, and at the required distances apart to admit of hoeing and weeding, and thus it requires less harrowing to cover the seed. The hoeing is as perfect as it well can be done by hand, and all the surface is moved—a system which is seldom carried out when it is hoed by the piece. In the turnip hoeing the plants are at regular distances, and all the surface is moved, so that no weeds escape. I may mention that the judges of swede crops for the Herefordshire Agricultural Society, the season before last, mentioned the cultivation of my swede crop as *the most perfect they had ever seen*; and I believe that in a field of 40 acres a man might have crossed it in six places, and not found six double plants. Of incidental work I need say little more than to remark that, in weeding, collecting couch, collecting turnips and potatoes, making hay, turning barley and other crops at harvest, picking stones from the land, &c., &c., the boys are peculiarly adapted, as these operations do not require strength, but care, and from their size the boys get *so much closer to their work*.

But these are few of the great advantages to be derived. Whilst my boys are learning to be good and skilful labourers, and to get their living, they are rescued from what are too frequently dens of immorality and vice, and are learning their duty towards their God, and their duty towards their

* Mr. Mechi tells me that in his neighbourhood they pay 11s. per acre for planting wheat.

neighbour. They are learning habits of cleanliness, and a systematic mode of living, and may be, I trust, the commencement of a better race of men.

You may ask, Is this system appreciated by the labouring class? I should say, most decidedly it is.

I believe, in three months after I had filled up my number, *I had refused as many as sixty applicants* (some from a distance), and one poor woman walked 24 miles to get her boy placed with me, but my number was already made up.

There is another great advantage I must not omit to mention, that in keeping these boys *I am consuming my own manufactures* (wheat, pigs, sheep, &c.), by which means I have the bran back on the farm; I have the butcher's profit of pigs and sheep; I get the manure (night soil) on the land, and *I keep my capital in my own country* (my farm) *instead of sending it abroad* (*i. e.*, the labour market). I believe I have given you every particular requisite, and I think the calculation very near. The only items I have omitted are milk (skimmed), which would otherwise go to the pigs; and garden stuff, which they have when in abundance. The calculation is from Sunday morning till Saturday night, and the boys have lived in the usual manner. The expense may vary, but I believe this is about the average. I have said nothing of the accommodation and expense of filling up, but it is not great. There are also books, &c., which are those generally used by the national schools, published by the Society for the Diffusion of Christian Knowledge; in these a sovereign will go a long way. This and the interest of capital invested in furniture, &c., when divided amongst 20 boys, amounts to very little per week; perhaps in all 2s. per boy.—Hereford Times.

ON THE FEEDING OF FARM HORSES, FOR THE PREVENTION OF COLIC AND INFLAMMATORY AFFECTIONS OF THE ORGANS OF DIGESTION.

BY MR. JAMES CARMICHAEL, RAPLOCK FARM, STIRLINGSHIRE.

(Premium, Five Sovereigns.)

The horse is at once the best adapted and the worst requited animal subservient to man. Originally the most healthful, but now the most sickly of quadrupeds, its whole life is a series of incessant toils, all tending to the personal gratification and positive gain of the possessor, and its death is too often occasioned by wanton cruelty or actual neglect. Nor is this ill treatment confined to any particular condition of man or class of horses—the cart, the coach, and the course annually consigning thousands of the noblest steeds to the dogs, at an early age, and under the most inexcusable circumstances. There is, however, one description of horses meriting particular attention, not only on account of its vast importance to the country, but also because of certain diseases to which it is much exposed, namely, *affections of the stomach and bowels*, to which horses employed in agriculture and heavy draught are well known to be more subject than any other class whatever. And this will doubtless appear to many the more surprising, seeing that husbandry horses are of all others least at home, and consequently less liable to be affected by the temperature of different stables, or change of food or keeping; and are generally supposed to be regular in their hours of labour and times of feeding. Nor is their anything in the grosser habit and muscular form of the common plough horse, compared to those of harness horses, sufficient to account for this striking difference of constitution, in the arbitrary distinctions of breeds under which they are severally classified. The cause of this anomaly must, therefore, be traced to some other source; and if the inquiry be fairly and fully prosecuted there cannot be a doubt that, in very many cases, those diseases will be found to originate in improper treatment of the horse under particular circumstances; and resulting from that slovenly indifference to, if not culpable ingorance of such matters, with which too many agriculturists, and their servants especially, are often chargeable.

To establish this point, as well as to form a right conception of the maladies in question, it is necessary, first, briefly to attend to the intestinal organism of the horse, as given by the highest medical authorities; otherwise it will be impossible to illustrate the facts of the case, or convey an adequate idea of the accuracy of the inferences deduced therefrom. Anatomy shows that—"Of all creatures the horse has the smallest stomach, relatively to its physical size. Had he possessed the quadruple ruminating stomach of the ox, he would not have been at all times ready for exertion: the traveller could not have baited his steed, and resumed his journey. The stomach of the horse is not so capacious, even when distended, as to impede his wind and speed; and the food is passing onward, with a greater degree of regularity than in any other animal. A proof of this is, that the horse has no gall bladder.

"Another peculiarity with the horse, is the supply of fluid. When the camel drinks, the water is deposited in cells, connected with the stomach; but if the horse drinks a pail of water, in eight minutes none of the water is in the stomach, it is so rapidly passed off into the large intestines". Let it also be borne in mind, that the whole intestinal structures of the horse are of an equally peculiar form, and very sensitive in every part; that the stomach, moreover, rests upon the large intestines; its forepart is close to the liver, and its left side is

in contact with the diaphragm, or midriff—one of the most important muscles of the frame, and the principal agent in breathing, besides performing many other important functions, by means of its connection with the other intestines. And thus in whatever organ, or from whatever cause, internal inflammation may originate, the immediate connection or sympathy of parts soon conveys the disease throughout the whole intestines.

Such, then, are the peculiar intestinal structures of the horse; and so rapid is the progress of a pail of water from the stomach through all the convolutions of the small intestines, sixty feet in length, at a moment when these sensitive teguments, and all around, are probably at a temperature more than double that of the liquid they then contain. What but spasms, inflammation, and death can await the poor horse, unless very prompt and efficient remedies are applied? Wet, green food, given in quantity, under similar circumstances, will produce the same effects upon horses, heated and exhausted by previous hunger and fatigue. This almost every post-master and groom well knows, and studiously endeavours to avoid; and surely the farmer ought also to be equally aware of, and guard against it. Yet he complains of the loss of one and another of his best horses, by some hidden sickness, which he cannot account for; nor, until too late, discovers that the horse, having returned from his last day's work covered with perspiration, or shivering under rain, was led to the water-pond, plunged in, and drank his fill, then put into the stable, and served with such provisions as came to hand, fresh or fusty, and left for the night, without a single hair being touched with wisp or comb. The servant may be also young and inexperienced; but why is he intrusted with horses, or not properly instructed in the first principles or his duty towards them?

There are other causes of an opposite character, where, from the propensities of the servant, in mistaken kindness to the horse, or even with the consent of the inconsiderate master, horses are served with corn unseasonably, or in excessive quantity, or of unsound quality. "*Stomach staggers*" soon ensue, and instances might be related of horses dropping down dead in the yoke in this state—the stomach having become ruptured by the over-distension or swellings thus occasioned, either from too full a feed of any kind, or partaking of food of an improper nature, or even drinking an excessive quantity of cold water, and then put to severe exertion. A case of this description came under the writer's notice very lately, where a valuable farm horse, in high health and condition, having, in the throng of seed-time, been served at mid-day with a quantity of bean *keavings* (chaff), or a mixture of the bruised beans and leaves, of which horses are very fond, and, though naturally flatulent, are quite safe as an evening or an idle day's foddering; but being in this instance given immediately after a feed of oats, and the horse having thereafter obtained his pleasure of water on his way to the yoke, he had not proceeded many boutings with the harrows when he showed every symptom of excruciating pain, and, in a little more than two hours, died in the greatest agony, of a ruptured stomach. And in another instance, a mare, with a voracious appetite, having been depastured the night in a field abounding in white clover, very ripe and parched with dry weather, on being next morning taken to a cold spring, drank a great quantity of the water, was then put to the plough, where she shortly became very unwell, and on being taken to the stable, was dosed by an ignorant blacksmith, with spirits, ginger, and pepper, until inflammation of the kidneys supervened, and death ensued. Horses have also been known to die of inflammation of the bowels, from eating new-washed raw potatoes, when warm from the yoke.

In addition, however, to such casualties as these, there are other latent sources of disease, arising from the mode of keeping the natural, and preparing the artificial food of many farm horses, as well as the manner of supplying it. The small farmer, in particular, generally throws the straw into large *mows* or heaps, on low, damp floors, where it becomes musty; or stows it in the confined loft of a crowded stable, where fumigated with the exhalations from beneath, the empoisoned mass is dealt out to the devoted animals, who thus become the innocent victims of various diseases, if not of subsequent destruction. Or, if a portion of the food is boiled or steamed, it often wants the most essential ingredient of the whole, a proper quantity of salt; so that the mess is probably sour ere it is administered, or immediately becomes so in the animal's stomach.

Then there is the half-rotted, frosty-cut clover, or aftermath, at the close of autumn, so pregnant with danger to the farm horse, all of which dangers the harness horse escapes, by a more uniform course of keeping, The latter is chiefly fed on corn and hay, and is regularly supplied at intervals of three or four hours at most, according to his work or stages; while the farm horse has his consecutive yokings extending to ten or twelve hours a day, often more, with but little intermission for bating or rest; has less corn, and in general subsists nearly two-thirds of the year on coarser fodder (oat or bean straw), which fills the stomach without affording much real nourishment.

Let it not, however, be said that the fresh straw of the common crops of the farm, together with the customary feeds and mashes duly served, are insufficient to maintain the horses in proper condition, under ordinary circumstances, without the aid of

much or any hay. Nothing is so easy and obvious than to prepare the food of horses in a proper manner, although it certainly requires some care, activity, and arrangement, on the part of both master and servant. If, for example, in commencing with the fodder of the new crop and until the system of steaming becomes more general—if the new straw were mixed with some sweet, dry straw of the previous season, or sprinkled with a few handfuls of salt, as it comes from the thrashing-floor, it would greatly promote the health of the horses, as well as of the other stock; and provident farmers always reserve one or two stacks of corn or pulse, for the purpose of being so mixed or used alone, till the straw of the new crop becomes seasoned by a few weeks in the stack—as peas or beans, beans especially, are very flatulent, if taken new or in a soft state, but excellent fodder thereafter, and are much relished by horses accustomed to it. And when the leaves, pods, and chopped stems, or chaff of beans, and the *tails*, or small corn from the winnowing-machine, are mixed and boiled, or steamed, together with some turnips or potatoes seasoned with salt, and given lukewarm in lieu of oats to the jaded horses, as they return in the evening, the benefits are apparent in their plumper form and glossy coats. It is by means of such mashes, or by combining the corn with the chaffed hay, that old and weary horses are enabled to masticate so easily, and lie down more readily to repose; while others must stand several hours gnawing their ill-suited ration, or hastily swallow it in a crude state to stifle the cravings of hunger, and then lie down to die of colic.

Carrots and Swedish turnips, well cleaned and dry, may safely be given in an unprepared state, when the horse is cool, and not attenuated with warm food; and the second crop of clover, if early made into hay, and slightly salted, with or without a mixture of old hay or straw, might be made greatly more available for all kinds of stock, instead of remaining uncut till late in the season, bleaching under every change of weather, and then given to the horses in a half-rotted green state.

These remarks may suffice to show that the causes here assigned, as inducive of the maladies referred to, are not gratuitously assumed, and that the subject really claims the immediate attention of all interested in preserving the health of the horse. The means of preventing such diseases are therefore the more obvious, inasmuch as the cause and effect are thus placed in juxtaposition; *pari rationi*, the remedy must be apparent, and prevention more meritorious than cure. In place, then, of presenting a pail of cold water to a warm horse, a little tepid water should be substituted—the mouth being previously washed, and freed of coagulated saliva, with cold water, and the horse stripped of every encumbrance, carefully rubbed down, and allowed to stand picking at dry hay or straw till cooled, before any cold water or corn is given him, or he be turned out to pasture. For not more grateful is a change of raiment to the dripping teamsman himself, on escaping from the drenching rain, than is a thorough cleaning from mud and sweat to his smoking steeds, just relieved of their weary draught. Yet in nothing are farm servants in general more negligent; nor are those men otherwise to be taught but by the watchful superintendence and strict discipline of the master, seasonably enforced—not merely in the uniform treatment of the horse, in and out of yoke, but to the state of the stable, which can hardly be too clean or over-ventilated—a point almost wholly overlooked on many farms. How many districts may be traversed without seeing a single roof-ventilator, or even a hole in the wall of the stable or cow-house! It is well to have separate houses for the provender, as contiguous as possible to the stable, but not connected with it by any party door or hatch, which never fails to act as a conductor of the heated atmosphere of the stable into the connected apartment, in the same way as it passes through the racks and crevices into the stable-loft, which is often hotter than the stable itself, especially under a tile roof. Such a plan would supersede the use of high racks, so awkward and unnatural to the horse, and so wasteful of his food; while he, with much greater convenience, could feed either standing or lying, from a manger or sparred crib, in one angle of the stall, with a corn box in the other.

Of the best mode of curing inflammatory complaints, it were superfluous here to treat at length, as it manifestly must tend to a still greater aggravation of an evil already far too extensive, were every farmer in each intricate case to become his own farrier, without any tuition, and but in possession of a few recipes, or certain potent medicines, the properties of which he neither understands nor can properly administer. And grievously, indeed, would the patronage and funds of the Highland and Agricultural Society be wasted, in the establishment of a veterinary college under an able professor, should any one, farmer or not farmer, decline the inestimable boon of obtaining the assistance of a competent veterinarian provided for them, and now in progress of being placed within the reach of the remotest cottage in Scotland. No; the farmer has suffered enough from his own apathy, and the quackery of common blacksmiths who must needs pretend to the veterinary art, and whose pharmacopœia almost exclusively consist of stimulating drugs. Every disorder was termed "*bots*;" and *worms*, *bots*, and *colic* were confounded together and treated alike.

Science, however, has now happily expunged "bots" from the vocabulary as perfectly innocuous, and found other and safer vermifuges than those formerly resorted to.

Let the farmer, then, simply attend to the first symptoms of disease, and minutely investigate every particular relative to the animal's situation, work, food, and drink, during the preceding day or night. A knowledge of all these is indispensable to a discrimination of the complaint; and if servants will tell the truth, or whether they will or no, the real cause may frequently be discovered by the farmer himself, and thereby greatly facilitate the cure. Meantime, if need be, four to six quarts of blood may be taken, according to condition, from the horse, in *almost every case of sudden indisposition*; or, should it prove to be a spasmodic colic, two to three ounces of oil of turpentine, added to a pint of warm ale or gruel, will generally afford instant relief. But farther than this no one should venture without the presence or permission of a veterinary surgeon, or some other experienced farrier, whose advice must instantly be sought and implicitly followed; for such, it is seen, is the extreme sympathy of parts pervading the whole system, that injudicious applications greatly heighten and rapidly extend the disease. To illustrate the propriety of urging these precautions, it is only necessary here to add another fact to those already adduced, by stating, that a horse lately under a dose of a shop-bought strong medicine, requiring the total withholding of green food during its operation—but the nature of the medicine being misunderstood by the attendants on the horse—green food was given, and the poor animal died in the course of a few hours thereafter, of entanglement of the intestines, brought on by the arrant neglect of not requesting the assistance of a veterinary surgeon. — Transactions of the Highland and Agricultural Society of Scotland.

ENFRANCHISEMENT OF COPYHOLDS.

Since the passing of the act of the 4th and 5th of Victoria, for "effecting the commutation of certain manorial rights," and that of the 6th and 7th of the same reign, "to explain and amend the same," but little progress has been made in effecting that desirable object; and, indeed, it was apprehended that nothing less than the introduction of a compulsory statute would be sufficient to produce its accomplishment, it having been left to the lord and the tenant of the manor to settle the terms.

A movement has, however, been made by the copyholders of Wolverhampton and its neighbourhood, which has induced the Duke of Sutherland and Mr. T. W. Gifford, as lords of the manor, to offer to their tenants what appear to be very fair terms of enfranchisement. The solicitors to the lords have issued a circular in which they state that they are instructed "to offer to the copyholders of that manor enfranchisement of their respective properties." They proceed to say that it has required much deliberation to arrive at any general rules on the subject, in consequence of the diversified nature of their property; but that after much time spent upon the subject, they have hit upon a plan which has given universal satisfaction, of which the following is an outline:—

"Every copyholder of Stowheath is desired by the lords to 'at once have the power of obtaining the freehold of his property on the most equitable terms, with the greatest facility, and at the smallest legal expense.' The fines due on alienations in this manor, according to the custom, are two years mproved value; and the report of the copyhold commissioners shews that on such the price of enfranchisement averages from *four* to *six* years' value. The solicitors in the present instance say, 'We propose in this manor to take a scale, varying from *two* to *four* years' value only, according to the rental and nature of the property;' and they add, 'this abatement from the usual charge will be so considerable, that we have only felt justified in recommending it, by a reference to the number of houses and buildings held of the manor, and by desire of the lords to place enfranchisement within the immediate reach of every copyhold tenant.' This is justly considered by the copyholders at large, to be a liberal and handsome concession. Building-land and other property having prospective advantages will not be dealt with according to that scale, but according to its particular circumstances; 'but,' says the circular, 'there is a just proportion well understood and acted upon in such cases, and nothing beyond that fair proportion will be expected.' The lords have also appointed a respectable surveyor of Wolverhampton to adjust the price of enfranchisement in each case, who will charge a fee of 10s. 6d. only, the lords undertaking themselves to defray the other expenses of valuation. When the price has been arranged by the surveyors, abstracts of the titles of the lords to their respective interest in the manor, which of course will form the freehold title of the enfranchised copyholder will open to the inspection of any copyholder, at the offices of the lords' solicitors, where a short printed form of the enfranchising deed 'settled by counsel,' may be had. On payment of the price, and the steward's fees (on which we must say a word presently), the deed presented by the copyholder will be executed by the lords without expense to the person whose estate is enfranchised. And the circular concludes thus—'Some apprehension having prevailed that, where property is in mortgage, enfranchisement might be difficult or expensive, we think it right to state that such is not the case. On the contrary, a conditional surrender, by way of mortgage without admittance, passes no legal estate, but by the simple concurrence of

the mortgagee in the enfranchisement instrument, he will obtain a legal imitation of a freehold, instead of a surrender of copyhold interest, for his security, and the owner of the property will have the benefit of the enfranchisement subject to the mortgage. The form of the instrument to meet these cases may be had at our respective offices.' This is a wise resolve on the part of the lords, carried out in a fair and business-like way; and the lords having thus agreed to enfranchise, the facilities afforded by the Act of Parliament and the commission will come into operation.

"There is only one other part of this circular which requires to be noticed, namely, the steward's fees. These have been settled in the case of Stowheath manor, upon the following scale: where the consideration paid for enfranchisement does not amount to £50, the steward's fee will be £2 10s.; if £50 and under £100, the fee is £3 10s.; if £100 and under £150, fee £4 10s.; if £150 and under £300, fee £5 10s.; if £300 and under £500, fee £6 10s.; and if £500 or upwards, £7 10s. This scale does not meet with the same degree of approval as the rest of the scheme, being considered to bear most hardly upon the smallest copyholders. It is, however, worth something to have the fees reduced to a certainty, so that the copyholder will know exactly what enfranchisement will cost him, and even should he think the fee somewhat heavy, he will have the satisfaction of knowing that he pays it once for all—that from thenceforth he is emancipated from serf-tenure, and becomes a freeholder. And let us hope that this offer of enfranchisement from the lords will be universally responded to by the copyholders of this industrious district, and that in two years copyholds will have ceased to exist."

In addition to the above, we have great satisfaction in referring to an advertisement in another column, wherein Charles Douglas, Esq., as steward for the manor of "Chedingsell Grange, in Inworth," in this county, announces that the lord of the manor (J. H. Blood, Esq.) is willing to "Enfranchise, upon equitable terms, the copyhold estates within the manor." We shall be glad to receive an account of individual cases (wherein names may or may not be given), stating the terms agreed upon, which will tend much to assist the public as well as lords of manors generally.—Essex Herald.

SAWDUST CHARRING AND CLAY BURNING.

Sir,—Having been repeatedly applied to for instructions for charring sawdust, and also for burning clay subsoils, containing little or no organic matter, to act as fuel, I take the occasion of Mr. Whitmore's paper, at the Royal Agricultural Society, reported in your last, to bring the two questions together and let them answer each other.

Charred sawdust is a form of charcoal particularly adapted for manure, but the difficulty is, to keep so light and loose a substance from falling into the fire and burning away, if put on sparingly; or, if heaped up to prevent this, from filling and choking the air way, and thus extinguishing the fire.

The clay subsoil of stiff soils, turned up and burnt, not only manures, by yielding its alcaline and other fertilizing ingredients, but, at the same time, both deepens and loosens the soil—three benefits of great importance. But such subsoil rising in heavy clods, which contains very little combustible matter, requires fuel to keep it burning, which is not always at hand, nor to be had cheap.

When sawdust is within reach it is just the thing; the clay will supply the knobs to build up with and support the sawdust, with air way between, the skill of the burner being exercised in so proportioning and arranging them that the sawdust shall fall in fast enough to keep up the fire and moderate the air way, to the charring point, without filling in so as to extinguish it. And this may be done by varying the arrangement according to the proportions. Where clay burning is the object, one ton of sawdust would probably suffice for 100 of clay; and where the object is to char the sawdust, I think, with skilful management, two tons of clay would do for one of sawdust; considering that the clay does not consume, and will shrink but little, whilst much sawdust falls in through the hollows as it becomes charred. Where clay is not at hand seeds or peat may serve the purpose.

Both are improved by the charcoal being disseminated through the substance of the clay, which may be easily done with the shovel before burning and while the clay is soft; but this may hardly pay for the labour unless in garden culture.

There is yet another method of charring sawdust for manure, on a different principle, *i. e.*, by the heat produced in slacking lime.

If wet sawdust be heaped up with fresh burnt lime the wet will be drawn out by the lime for slacking, and the heat produced may fire the heap and burn the sawdust to ashes. But if the proportion of sawdust to lime is very great, keeping the stones of lime far apart, the heat of slacking will be too much weakened by dispersion to produce fire.

By keeping a medium then, and covering well in from the air, we may attain a point at which fire will be produced in the heart of the heap, but prevented from breaking out to destroy the charcoal.

This medium must depend, more or less, on the quality and dampness of the sawdust; but for that of fir, in its ordinary damp state, in the saw-pit, by changes of weather, we might try 20 bushels to one of lime, laying one-fourth as a bed, mixing one-fourth of the wettest with the lime, and covering in with the remaining half. If the fire break through, more sawdust might be heaped on, and so much more charred; or if no more, the holes may be stopped with earth in the usual manner.

Prideaux.

THE NETHEREXE FARMERS' CLUB.—ON THE USE OF BONE MANURE.

At the monthly meeting of this club, Mr. Robt. May, the president of the club, in the chair, the subject of bone manure as a fertilizer for turnips was introduced by Mr. J. Griffin, who read a valuable paper detailing the result of his own experiments, the substance of which we here give.

Mr. Griffin commenced by stating that he should only relate facts—facts which had come under his own cognizance, because it would be presumptuous in so young a member to theorize, still more to lecture his neighbours, most of whom were older than himself, but the experiments he had made were perhaps worthy the attention of farmers who occupied light sandy soils, soils of the same description which he himself occupied, and on which these experiments had been made. It had been stated that crushed bones when used in their raw state remained in the land for so many years that their employment was not profitable to rack renters or tenants with short leases; there was much truth in that argument, but the researches of modern science had provided a remedy—the bones could be dissolved in oil of vitriol (sulphuric acid), a chemical combination would take place between the acid and the bone (a great portion of which consisted of lime), and by the action of the two, superphosphate of lime would be formed, a manure whose fertilizing effect would be very soon brought into action. He would, however, first state the result of his experiments with raw bone. He commenced using this manure in the summer of 1844, on a field of three acres, which he divided into three equal plots. He manured No. 1 with two quarters of bone at a cost of 38s. No. 2, with three cwt. of guano mixed with three bags of ashes at a cost of 39s. No. 3, with ten loads of dung, at 6s. per load, £3. At the first appearance of the turnips, those manured with guano looked best; with dung the next, but not very thriving; whilst the third portion (those manured with bone) looked sickly and barren, which was attributable partly to the dryness of the season, there having been no rain for several weeks after the turnips were sown, as after the rain came they rapidly recovered, and at stocking time they formed the best crop of the three. On that portion of the land on which the bone had been applied, he had seen a remarkable difference in every crop since, showing the lasting benefit of this manure. In the following year, he again tested bones against farm-yard dung, when the former had a decided superiority from the first appearance of the plant up to stocking time, and the cost was two-thirds less. He also used bones for swedes, with a similar result. In 1846 he began dissolving bones for common turnips; to prove its efficacy he manured a piece of ground adjoining with unprepared bone, and although this gave a good crop, it was far behind that of the dissolved bone, besides which the action of the latter is much quicker, and it can be depended upon, no matter what the season, whether dry or wet. It was an old proverb that "seasons would beat judgment," but the use of this manure would go far to prove that this, like many other old sayings, was a fallacy, or at least not always applicable, as he believed the use of this manure, combined with the other requisites of good farming, would ensure a crop of turnips on soils adapted for their growth, such as poor light sandy or gravelly soils. He used eight bushels of bone per acre to 80lbs. of acid; this he had found by experiment to be a liberal dressing sufficient to ensure a good crop if not attacked by fly or wireworm; and it was perhaps extraordinary, but in no instance had he suffered from these pests on land which he had manured with dissolved bone. The cost of this dressing would be, at present prices, about 30s. per acre (bones 21s., acid 8d. 4d., dissolving and mixing with dry earth 6d.), so that it is recommended for its cheapness as well as efficacy. He had given it a fair trial, and intended to follow it up to a greater extent, because he was convinced that no other manure would ensure a crop of turnips so cheaply. He had also tried fermented or partially decomposed bones against bone and acid, which gave him a good crop; but the part dressed with dissolved bone was fit to hoe 10 days before that dressed with fermented, and 14 days before the raw bone, and this proportion was preserved up to the winter. If asked as to his wheat crop, he could reply it was an excellent one, the best he had ever grown in his life, although in the worst field on his farm—he had 100 stitches per acre, and this he considered another proof of the fertilizing properties of bone and acid. He had also tested the value of this preparation as a fertilizer against lime and salt. At Christmas, 1846, he had ploughed down an errish field, and manured it with 5 cart loads of long dung per acre, which he valued at 4s. per load. When he tilled his turnips on a portion of this field, he drilled 4 bushels of bone, mixed with 40lb. of acid per acre, at a cost of 16s., and on another portion he used lime and salt, at a cost of £4 10s. He estimated, but he regretted that he had not weighed them, that he

had three times the weight of bulb in that portion dressed with the superphosphate more than that where he had used salt and lime; the cost of the one, including the dung, carriage, and spreading, being 40s., and that of the other about £4 per acre. During the last season he had also used partially heated bones and guano against dung; eight bushels of bone with 1 cwt. of guano, mixed with two bags of ashes, at a cost of about 36s. per acre. On one acre of the same field he used ten loads of very good dung, at 6s. per load; the carriage and spreading of which cost 10s. more, making £3 10s. The produce on this acre was very inferior to the rest of the field; the fly attacked the plant in a most dreadful manner, so that he had almost made up his mind to plough it up; and what was more remarkable, although every part of the dunged portion was ravaged by this destructive insect, they never attacked the part manured with bone. Ultimately the dunged part produced about half a crop, and the other part a most excellent one. He thought this statement worthy of their consideration; he had saved one-half the expense of manuring, and produced a very superior crop. If the dung had to be brought from a great distance, its cost was still more expensive. He knew something of this expense from his own experience, when he sent his team twice or thrice a week to Exeter, at an enormous cost; and this had led him to seek for something better, and which would better answer his purpose. He wished, however, not to be misunderstood. He was not speaking against dung: he recommended them to make as much good dung on their farms as possible; but, to do that, they must grow turnips; and this he had shown could be done without purchasing dung, and incurring the great cost arising from wear and tear of waggons, &c., by bringing it from a great distance. He next described his method of dissolving the bone, which is very simple. As much bone-dust as is required for the field is thrown into a heap about a foot in height, and well moistened with water from a watering pot, to ensure its being regularly done; and continue this until the bones will absorb no more water. The acid, then, having been carefully emptied out of the carboy (but not into any metallic vessel), is gradually poured over the mass, at the rate of 10lb. per bushel, if of full strength; another person continually turning the heap until the bone is nearly dissolved, which will be in a short time if the acid is good. This being done, a sufficient quantity of dry earth or ashes must be mixed with it, to make it dry enough to pass through the drill; then cover it with the same substance, and bank it up as close as possible. It must remain in that state for a few days, and then be turned back regularly; when, if not dry enough, add some more dry substance (nothing is better than road-dust, if it can be got). It should be turned over several times before it is used; and the proper season for its use is the month of April. He had twice dissolved the bone in old casks; but he recommended dissolving them in a heap in a convenient outhouse as the simplest. He would advise all light-land farmers to give it a fair trial; and he was sure they would not soon abandon it. He could not give an opinion as to its value on heavy lands, but it might act beneficially there also; at any rate it would be worth a fair trial. Having made some remarks as to the price, advising them to buy the strongest and most concentrated acid, which would be found the cheapest in the end, he concluded by strongly advising them to make their own superphosphate in the way he had pointed out; and by showing that unless they raised good root-crops they could get no beef or mutton, and without that no good stall-fed dung, and consequently but little or no corn.

Mr. Griffin having concluded, a discussion ensued, in the course of which

Mr. Lowcock observed that he fully concurred in the statement as to the value of bone and acid as a manure, especially in the moist humid vales of this neighbourhood. He had also used it with very beneficial effect in the south of Devon. He thought American bone much inferior to the English; as the better the animal, the richer the bone for manure.

Mr. Wippell was satisfied, from the details given by Mr. Griffin, of the value of the manure he had recommended; and, although he (Mr. Wippell) had never used it, he should be inclined to try it. He thought Mr. Griffin deserved their thanks for the manner in which he had introduced the subject.

The Chairman, Mr. Radmore, and others, also took part in the discussion: and, a vote of thanks having been given to Mr. Griffin, the meeting separated.

BATTUES.—At a meeting of the Royal Society for the prevention of cruelty to animals, held on the 20th May, the Bishop of Norwich said—"He would not trespass further on their time than simply to mention one or two subjects which bore on the objects they had in view that day. One of them might be checked with profit to the country and to those engaged in it. It might be a difficult point to attack, since it referred to those attached to field sports. He had never been attached to them, and was unwilling to press against certain amusements, which may have advantages and other claims, and he would not, without great caution, put a stop to them. But there was one point that allowed a legitimate subject of criticism; it was to be dealt with, though with caution, and he would leave it to the feelings of the meeting whether it was right or wrong. He alluded to the subject of *battues* [hear]. They

all knew what they were. The gentlemen who practised them did not go out for the benefit of their health, for the pleasure of exercise, nor did they wander over their broad fields for the purpose of killing a few head of game [hear]; but gentlemen assembled together with numerous attendants—they forced the game into a small compass—they assembled not for sport or exercise, or for the relaxation and pleasure derivable from field sports, but merely to show that they could shoot unerringly, and slaughter their hundreds of heads of game of a morning [cheers]. They look to the calculations brought in, and there is a rivalry amongst landowners to be able to say whether they can produce their 900 head of game in a shorter time than others [hear]. There was a time in his younger years when this would be called an un-English and almost a barbarous practice. He remembered when severe comments used to be made on the conduct of the sovereigns and nobles on the continent for having animals collected together by forest-guards and so forth, that they might have the pleasure of shooting them wholesale. We considered it then un-English and disgraceful. Would that we now considered it as such, and that people did not enter into a barbarous practice, and think it allied to field sports in the nineteenth century, which they condemned in the eighteenth. He never heard of those *battues*—of this wholesale destruction of game—without being grieved that the sentiments of former days were not the sentiments of the present time" [hear].

THE RURAL CYCLOPEDIA.*

The twelfth and thirteenth parts of this work fully sustain our previous remarks of its value and general utility. We are glad to find that the author, casting aside the puerility and game-loving notions of many agricultural writers, fully enters into the present system of preserving game. The farmers certainly require protection from this species of injury, and it is an undoubted fact no profitable farming can exist where game is in excess. Mr. Wilson thus sums up his remarks on these laws:—

"Blackstone alleges that the game-law system, by giving every man an exclusive dominion over his own land, encourages agriculture and georgic improvement. But if the exclusive right of killing pheasants and partridges be requisite to dominion over the lands of a farm, the exclusive right of killing rats and mice must be requisite to dominion over the building of a farmery; and if the restraining of a tenant from meddling with pheasants and partridges, or with the eggs of teals or widgeons can promote the good cultivation of the soil, the restraining of him from meddling with rats and mice, or with the ovules and larvæ of destructive insects, ought also to promote the proper management of the farmyard. The dominion which the game-laws give a landowner over the soil, is not a dominion of patronage, or encouragement, or assistance, or legislation,— or a dominion of mind, or of knowledge, or of silent majesty; but it is an arbitrary, physical, and uncompensating control over some of the productiveness of the land,—a sheer power of intrusion and encroachment,—a right of giving some disturbance and trouble in person, and of authorizing the same to be given by others. Other varieties of dominion over the soil, quite as distinct and far more powerful, such as restriction in the use of certain manures, prohibition from breaking up grass lands, and the inculcation of a certain and uniform rotation of crops, are maintained throughout many estates, in virtue of express covenants in leases; and these might easily be so extended and multiplied in theory as to reserve to the landlord all control over soil and produce, and to make over nothing to the tenant but an empty name; but, so far from encouraging agriculture, they encumber and embarrass it; and in the exact degree in which they reserve dominion to the landlord, they enfeeble and cripple an intelligent tenant, and detract from the intrinsic value of his farm, and prevent him from either improving the soil or contributing to the national wealth. Yet a tenant knows the precise limits of those instruments of dominion, and has voluntarily subjected himself to them, and can calculate the amount of produce which they will prevent him from realizing; but he has had no option respecting the game-law instrument of dominion, and knows not how many intrusions and interferences it may make upon his grounds, and cannot guess whether he will be annoyed most by an excess of game in infesting his fields, or by an excess of sportsmen pursuing the game.

"Another reason assigned by Blackstone for the game-laws, is that they preserve the several species of game from being extirpated by a general liberty. But this reason powerfully, though tacitly and indirectly, contradicts the preceding one; for it assumes that the wild animals designated game, as well as the larger wild animals not so designated, are liable to be completely driven before the onward march of society, and to be utterly exterminated by the progress of the arts of social life; and it therefore concedes that the forcible or statutory conversation of game opposes the true interests of the aggregate community, and acts, in particular, as a check upon the sweeping power of thorough agricultural improvement. If the unrestrained development of social energy, called ambiguously by Blackstone "general liberty," and involving the modification or removal of every natural hinderance to the thorough prosperity of agriculture and the other arts of civilized life,—if this tend to extirpate the hare and the partridge and other game, as certainly as it tends to extirpate the wolf and the fox, then the principle of protecting game by statute law is the same in kind, quite as unjustifiable and essentially as foolish, as would be the principle of legally protecting the wolf and the fox.

"A third reason assigned by Blackstone for the game-laws, is the prevention of idleness and dissipation in husbandmen, artificers, and others of lower rank, which would result from universal licence. But if it be a good thing for gentlemen to pursue game, how comes it to be a bad thing for husbandmen and artificers to pursue it? or are idleness and dissipation irreproachable qualities in landlords, and vicious qualities in tenants? or do squires and noblemen and certificated gentry take upon themselves the whole care of game, and go through the toil of pursuing and killing it, just that they may shield yeomen and ploughmen from temptation to vice? or can all the alleged idleness and dissipation which would have resulted from universal licence, bear a moment's comparison with the torrents of demoralization and misery which have continuously issued from all sorts of violations of the game-

* The Rural Cyclopedia; or a General Dictionary of Agriculture, &c. Edite by the Rev. J. M. Wilson. A. Fullarton and Co., London.

laws, between the pettiest infractions and the most systematic poaching, and swept across the whole surface of rural society? Besides, if, according to Blackstone's second reason, an universal licence would speedily extirpate game, the very best method of putting an end to all the alleged temptations to idleness and dissipation would just be to give that licence, when the evil would soon and for ever cure itself.

"A fourth reason assigned for the game-laws—and said to be a reason oftener meant than avowed by the abettors of these laws—is the prevention of popular insurrections and resistance to government by disarming the bulk of the people. But the people can keep many formidable weapons in spite of the game-laws; and some might clandestinely keep prohibited weapons out of mere irritated feeling, who would never think of keeping them under universal licence; and few or none could learn from the peaceable pursuit of game any rudimental knowledge of military science; while many unavoidably acquire from systematic violation of the game-laws, both a daringness of disposition and an expert use of fire-arms which may render them truly dangerous. Nor during all the periods of the game-law system preceding the invention of gunpowder, do statesmen and barons ever seem to have contemplated the disarming of the peasantry as either an object or an effect of the game-laws; for, in those times, hawks were chiefly used for killing birds, and hounds and nets for killing quadrupeds, and neither hawks nor hounds were in any risk of being used as ancillaries of sedition.

"A fifth reason for the game-laws—though not assigned in the same formal manner or by the same professional class of writers as the preceding four—is the policy of alluring the landed gentry to reside in the country, by the provision of a fascinating and aristocratic amusement. 'If the game-laws may be regarded as somewhat favouring the propensities of the upper ranks,' says a writer who, on almost all other grounds, condemns these laws, 'their policy may not be in this respect greatly erroneous. There is a selfishness in insisting that no laws ought to accommodate themselves to these propensities. The station of such persons excludes them, in great measure, from such diversions as make part of the recreation of the lower classes. That the same partial spirit which may be deemed to distinguish the game-laws, should pervade and quicken our whole legal system, is not a thing to be wished; but when, as in the present instance, the resulting consequences are not evil, to call towards them that feverish spirit of discontent, which tends to extinguish the social character of man in civil community, is neither liberal nor wise.' If these laws answered only this one end, the inducing persons of rank and property to reside more on their estates, by securing them a local amusement suited to their inclination and taste, this alone ought to weigh much in conciliating our approbation towards them. A sensible modern writer, remarking on a district in Yorkshire, where the landed proprietors chiefly reside on their estates, observes, that 'the good effects of this are everywhere visible in the improvement of agriculture, in the repair of the roads, in the administration of justice, and in the good order, comfort, and general happiness of the people.' Whatever tends to counterpoise the attractions which, in the progress of opulence and refinement, the metropolis of a great kingdom everywhere presents, ought not on slight grounds to be discouraged. The true strength and greatness of a state are in proportion to the virtue of its subjects; the empire of virtue is extended by whatever means the inclination from pursuits by which the mind is contaminated and debased; the sports of the field contribute to this effect, and more particularly among those whom such pursuits are most likely to solicit with effect; and to these, therefore, they are with reason more exclusively reserved. But if, according to a former reason, the pursuit of game induces idleness and dissipation, it can only debase the landed gentry and unfit them for their duty to their tenantry; or if, according to the present reason, it contributes to elevate public morals and to extend the empire of virtue, it ought, in all sound policy, as well as on every principle of justice and benevolence, to be conceded as freely to the great bulk of the people as to the upper ranks. The stated residence of a landowner on his estate, though naturally fitted to confer great benefits on his tenantry, and though generally a duty obligatory upon him to society, is not, in every instance, beneficial, but may, through the perversities of his character, be transmuted into a source of great, positive, and manifold evils; and whenever the attachments of a landlord to the country are so feeble in power, so gross in nature, so limited in range, and so wofully destitute of all sense of proprietorial responsibility, of all patriotism, of all feelings of justice to his people, and of all enlightened regard to the interests of agriculture, that the mere exclusive right to pursue and kill game shall draw him away for a season from the whirl of fashionable life in the metropolis, we have too serious cause to apprehend that his presence in the country is quite as likely to do harm as good. As to any district either in Yorkshire or anywhere else, where landlords and farmers live together in the mutual discharge of duty and the common enjoyment of prosperity, the very residence of the former, and still more the benign influence which attends it, must be ascribed to attractions and excellences, not arising from the exclusive pursuit of game, but existing in spite of it.

"A sixth reason for the game-laws—somewhat akin to the preceding one, but far more subtle and imposing—is an alleged exclusive right to the game of a cultivated country, founded on the circumstance of their being fed by the produce of land. 'In a highly cultivated, well-peopled country,' it is said, 'no animal can properly be considered as wild. All are supported by the property and labour of those who cultivate the soil. Some from their peculiar instincts, are, indeed, less capable than others of being entirely appropriated, and therefore, like lands uninclosed, are held as a joint property. But he who has no land, and consequently contributes nothing to their maintenance, is no more entitled to any use of them, than the inhabitant of one parish is to a right of commonage on the waste lands of another; and he who chooses to reside in a town, and to keep his property in money, has no more a pretence to seize to his own use a hare or a partridge, than a sheep or a goose, from him who has chosen to vest his property in land. In the former, as in the latter case, he ought to tempt the owner to sell what is wanted.' This argument, be it observed, refers to 'a highly cultivated, well-peopled country,' or to the ordinary conditions of general farming and cultivation under which most of the game of Britain occur; so that it affects, not landlords merely, but very specially all cultivators of land, whether capitalists or labourers, and likewise all who have a money interest in the land's produce. If game, like the deer of parks, were wholly supported within uncultivated inclosures, they might truly be regarded as the exclusive property of the parties to whom the enclosures belonged; but since they are supported on lands on which the farmer has lavished both his capital and his care, and on which the farm-workman has expended his productive labour, and to which the village-artisan and the city-merchant look for the returns of food which they have tacitly bargained with the rural community to receive in exchange for their village and city

productions, the game, according to the very principles of the argument itself, must clearly belong in the first instance to the farmer, in the next to the farm-labourer, in the next to other productive classes of the community, and last of all, to the landlord; who, in many an instance, is the mere passive proprietor of the land, and adds nothing, either directly or indirectly, to its productiveness.

"We sum up our observations on the game-laws in three clauses,—they violate the natural right of man, they rest on a basis of political injustice, and they mar the loyalty, contentment, and general good feeling of the great bulk of the community; and we shall illustrate these by a brief quotation from the very writer who states and argues the fifth of the reasons noticed by us in defence of the game-laws:—'No right which Nature has bestowed ought to be circumscribed in its enjoyment, merely by the will of those who rule. We are told, indeed, 'that in these prohibitions, arising out of the game-laws, there is no natural injustice, as some have weakly enough supposed, since, as Puffendorf observes, the law does not hereby take from any man his present property or what was already his own, but barely abridges him of one means of acquiring a future property, that of occupancy,—which indeed the law of nature would allow him, but of which the laws of society have in most instances very justly and reasonably deprived him.' Even the concurrent testimony of such justly valued authorities as Blackstone and Puffendorf, cannot reconcile to our reason a principle so directly adverse to every axiom on which the equal liberty of man is founded. The laws of society can in no instance justly and reasonably deprive mankind of any one right which Nature would allow them. This position annulled, all our natural liberties are annihilated. At once to value those liberties as sacred, and to hold such a position as orthodox, is utterly impossible. I confess that I always suspect a fallacy in that reasoning, from whatever quarter, or from however renowned an authority, which tends to shake the basis of the natural, or what is the same thing, the just and moral freedom of man. The consequences involved in the above doctrine are too important to escape the observation of reflective minds. * * The laws for the preservation of game certainly depart more widely from the line of genuine political justice, and expose the humble unqualified classes of the community, more to the hazard of punishment, and the oppression of power, than any rational advocate of moral equality can consistently approve. * * That the act of destroying game is no *malum in se* is evident; for if it were, the legislature could not license it. Not only the want of true wisdom, but the want of common justice in these statutes, requires the most earnest and attentive consideration in those who administer in the government of the state. Every amendment, however minute, in the defective part of its legislative system, is an immense acquisition of strength of our constitution. It takes a weapon from the armoury of its enemies, and knits more closely the union of its friends. Unwise laws are the worst foes of a state. The public statutes should perpetuate and keep alive the great principles of practical freedom."

CONSUMPTION OF FOOD BY LARGE AND SMALL ANIMALS.—In the last number of the *Journal of the Royal Agricultural Society*, is the following communication from Mr. Geo. Shackel, Reading, on the above subject, with note by the editor, Mr. Pusey:—"I was from home on the arrival of yours, dated 30th September, or I should have answered it earlier. The lambs which I mentioned to you as having wintered last year were both of the Hampshire breed, 100 in each lot. I will with pleasure repeat what I stated on Wednesday last respecting the feeding and quantity, and also give you an account of the cost of each lot as well as the proceeds of the sale when they were fat. The two lots were fed at the same time on the same food, and penned on the same ground, but were kept separate from the commencement. I allowed each lot when on turnips (because we did not slice the turnips, only the Swedes) the same sized piece per day; and when on Swedes, which we began about Christmas, 33 bushels (sliced) per day, and 18 bushels of excellent clover-chaff to each lot; and on the 20th of February, 1847, we gave them 1lb. of oilcake a day on an average until they were sold out.

Bought in the last week of October, 1846.

100 very large Hampshire Down lambs cost per head	£2	1	0
100 Hampshire Down lambs, weighing about 1½st. less than above, and very much smaller, cost per head	1	15	0
	£0	6	0

The latter were in much better condition than the large ones.

Sold out from 28th March to 10th May, 1847.

100 lambs which cost 41s., sold at Smithfield and Southall markets, realized on an average, with wool	£3	1	3
100 lambs which cost 35s., sold at the same markets, realized on an average, with wool	2	9	0
In favour of large lambs	£0	12	3

I ought to add that the markets were about 2s. per head in favour of the large lambs, the trade for mutton being about that difference, or rather more, when the large lambs were sold, which would leave 10s. 3d. instead of 12s. 3d. in their favour. Nothing would be more conclusive and satisfactory than a fair trial, in the same manner, between 100 of Sussex and 100 of Hampshire Downs, both lots of their breed of equal value; that is to say, 100 of best Sussex against 100 of best Hampshire, kept on the same land, and fairly tested out of doors, as a farmer would wish to winter them. Perhaps you will be able to get a fair trial between the large and small breeds, and then publish the result, which would be more satisfactory than mine.——NOTE BY MR. PUSEY.—The above trial seemed to me well to deserve a place in the Society's Journal, as throwing light upon the question whether large and small animals of the same race do or do not consume food in proportion to their respective bulk. This question is not merely interesting as a point of physiological science, but also in practical farming. A large body of farmers defend the Hampshire or West Down sheep, notwithstanding their plain appearance, by saying that this plain breed comes to a greater weight, and therefore makes a greater money return, than the Sussex or true South Down. The breeders of South Downs reply that, if their sheep are smaller, more of them can be kept on the same farm. Here, then, the abstract question has a practical bearing. Last winter I saw a little Devon beast by the side of a large Hereford preparing for the show of the Smithfield Club, and Mr. Trinder's feeder informed me that the small one ate about as much as his more bulky neighbour. In this second instance there was a very decided difference between Mr. Shackel's two lots, yet the larger lambs were satisfied throughout with an equal allowance of each kind of food; and, though of the same breed, made a better return by 4s. a-head than the smaller sheep. This plain fact seems to warrant me in calling the attention of practical men to this point of farming."

VEGETABLE INSTINCT.

Of all plants, the confervæ alone possess the power of locomotion, properly so called; and perhaps of all plants they alone consist of solitary individuals. Other plants are composed of communities, the buds (as I shall have some future occasion of shewing you) being the inhabitants, the stems consisting of store rooms and galleries, the little spongy bodies at the extremities of the roots being the true locomotive organs—the honey bees of the hive, collecting and elaborating the sustenance of the body politic; and if you expect trees to dance hornpipes for your diversion, you must get some city or bee-hive to set them the example. But if trees, as a whole, do not walk upon the surface of the earth, they in other respects exhibit abundant instances of spontaneous motion. For example, the tendency of plants to incline their stems, and to turn the upper surface of their leaves to the light; the direction which the extreme fibres of the roots will often take to escape from light, or to reach the best nourishment; the folding up of the flower on the approach of rain; the rising and falling of the water lily, and the peculiar and invariable direction assumed by the twining stem in ascending its prop.

If a pan of water be placed within six inches on either side of the stem of a young pumpkin or vegetable marrow, it will in the course of the night approach it, and will be found in the morning with one of its leaves floating on the water. This experiment may be continued nightly, until the plant begins to fruit.

If a prop be placed within six inches of a young convolvulus, or scarlet runner, it will find it, although the prop may be shifted daily. If after it has twined some distance up the prop, it be unwound and twined in the opposite direction, it will return to its original position, or die in the attempt; yet, notwithstanding, if two of these plants grow near each other, and have no stake around which they can entwine, one of them will alter the direction of its spiral, and they will twine round each other. Duhamel placed some kidney beans in a cylinder of moist earth; after a short time they commenced to germinate, of course sending the plume upwards to the light, and the root down into the soil. After a few days the cylinder was turned one-fourth round, and again and again this was repeated, until an entire revolution of the cylinder had been completed. The beans were then taken out of the earth, and it was found that both the plume and radicle had bent to accommodate themselves to every revolution, and the one in its effort to ascend perpendicularly, and the other to descend, they had formed a perfect spiral. But, although the natural tendency of the roots is downwards, if the soil beneath be dry, and any damp substance be placed above, the roots will ascend to reach it.

The root of the phleum pratense, when growing in a moist soil, is uniformly fibrous; but when growing in a dry situation it is furnished with a bulbous root, bulbs being storehouses for supplies in times of scarcity. The same is the case with the alopecurus geniculatus.

A tree growing from an old wall, or clift of a rock, will, as soon as it has exhausted the surrounding soil, send a stem down to the land beneath. This has been particularly remarked of the elm and ash in England, and the arbutus in Glengariff, and the clifts overhanging the lakes of Killarney, in Ireland.

The colchicum autumnale, a bulbous plant, pushes up its blossoms in autumn on a raised footstalk, the hollow in which communicates with the ovary, which is placed several inches beneath the surface of the ground, where the seeds are matured, and remain in shelter until the approach of summer, when they rise above the surface to ripen, and become distributed.

The plants in a hothouse do not direct their leaves to the stove in quest of heat, or the open door in quest of air, but to the sun in quest of light.

Plants in a cellar or dark room struggle towards the light; plants in an area turn the upper surface of their leaves towards it; on the contrary, their roots sedulously avoid it.

The tendril of a vine, or the stem of a creeping plant, never makes any turn until it comes in contact with some object around which it can entwine; after which, it proceeds in a spiral direction around the object held in its embrace.

The strawberry plant will thrust its runners completely across a garden walk on to a bed of soil on the opposite side; where it will for the first time, as it were perceiving its object to be gained, push out roots, and form a new plant. Trees have been found which have taken root on one side of a deep ravine, and having exhausted the sterile soil on that side, have pushed their roots across the abyss, and having gained the opposite side, have there struck deep root into the fertile soil.

An eminent modern writer narrates that among the collection of palm-trees cultivated by the Messrs. Lodiage, of Hackney, was one furnished with hooks near the extremity of each frond, evidently designed for attaching it to the branches of trees for support, when growing in its native forest. The ends of the fronds were all pendant but one, which, being nearer to the rafters of the conservatory, lifted its end several feet to fasten to the rafter; none of the other fronds altered their position, as they could not have reached the rafter had they attempted to do so. What a striking recognition in the tree of an evident fortuitous circumstance!

The Pandanus, a native of the Isle of France, sends out roots from the stem for support. If the tree leans to one side, endangering its safety, it puts additional roots at some distance above the rest, at the inclining side, which reach the earth, and form supports to the trunk perfectly analogous to the shores and timber work used by architects to prop a building in danger of falling.

AGRICULTURAL COMPARISONS ARE NOT ONLY "ODIOUS" BUT UNFAIR.

Agricultural comparisons of district with district, country with country, and of one practice with another, are, even when made with the greatest possible impartiality, *always* unfair. The maker of them is generally, although perhaps unconsciously, biassed in favour of the practices of his own district, and considers every variation from them wrong. Not only do soil, climate, and situation make a difference necessary, but agriculture is, more than any other art, governed by circumstances: these and experience point out the best, *i. e.*, the most suitable and profitable methods; and it may be fairly said that the practice of the best farmers in any district is that most suited to that particular district. By the best farmers I do not mean those following every farming novelty, but those who perform the practices common in their neighbourhood in the best manner.

Thus, let us consider England, Ireland, and Scotland. English farmers object to many Scotch practices; Scotch do the same with English; and both the English and Scotch fall foul of the Irish; but I contend that the circumstances in which these are placed are so different that no comparison can be made.

England has an insufficient quantity of land, a sufficient capital, and a great superabundance of labourers.

Scotland has a superabundance of land, a sufficient capital, and an insufficient supply of labourers.

Ireland has an insufficiency of land, a deficient capital, and a superabundance of labourers.

Or we may compare these countries to a manufactory, supplying a product always in demand, at three different times:—

1. The manufactory has plenty of raw material and plenty of capital, but hardly enow labourers. Here much machinery would be invented and used; the workmen would labour hard and be paid *well; women* and *children* would be much employed; and probably the manufactures would be rather coarse. This would be Scotland.

2. Suppose the raw material to be deficient in quantity, consequently only about half the labourers wanted to work it up; and suppose a law passed that those not wanted must be employed or fed; what then? Why, as in the first case, the task was to find enow men for the labour, in this it is to find labour for the men. Machinery would be disused, women would not be employed, consequently the cottages would be cleaner and neater, but little piece-work would be done for fear the work should not hold out; finer and more laboured work would be done; and the people being employed in every conceivable way, there would be a neatness and completeness of appearance which would be absent in the first case; but, the labour-fund having to pay so many more labourers, each labourer would have to take so much the less wages. This would be England.

3. Now, suppose this manufactory with a very deficient capital, much too little even to work up its deficient raw material, and that its labourers are much increased, and the law forcing it to support them abolished, what would be the result? The life of the workman would be a continued struggle with starvation; their competition would draw down wages to the lowest point. The manufacturer's deficient capital would not enable him to employ machinery; nor would it be wanted, for starvation would enable his labourers to compete with it, and to afford his manufactures at the lowest price. His labourers (half of them unemployed and starving) would be ready for any mischief, and would follow any nostrum-monger that would promise to better their condition. And those employed, having the lowest possible wages, would be forced to feed on the cheapest possible food, and go clothed in rags, and no doubt they would be called, and habit would make them, lazy, dirty, and vicious. This would be Ireland without a poor-law.

Suppose a well meant law passed for enforcing employment or food for these poor. The owner's capital, too limited before, would now be lessened by taking much of it away to feed the idle, and consequently there would be still fewer men employed, and still less work done. Before this law was passed, if there was any way to escape to some other place, many of the starving people would fly for their lives. But now if there was any means of forcing them away, however cruel, the owner would practise it to escape ruin himself. This would be Ireland with a poor-law.

In this manner a manufactory and its workmen might, in a few years, show the character of the Scotch, the English, and the Irish. It would be wholly a question of supply and demand.

I shall now consider Scotch and English farming.

The Scotch object to English farming—First, that it is much inferior to their own. Perhaps national partiality has a little to do with this; but it may be solved another way. Supposing the Scot came from Edinburgh to London, he leaves the best husbandry in Scotland, the Lothian, and comes to almost the worst *arable* husbandry in England, as Kent, Surrey, and Middlesex. Nor, except the more northern ones, are the English counties he passes through considered of the best cultivation.

Second objection: That so little machinery is used. By machinery the Scot generally means only fixed steam thrashing machines. But the English farms are generally too small; coals are too dear, being in many parts four or five times the price they are in Northumberland, and in those parts of Scotland where steam engines are used; and more than all, England is more than three times as thickly inhabited as Scotland. England contains one individual to 2¼ acres; Scotland about one to eight acres. It is sometimes said that machinery would not lessen labour, because those farmers that now use much machinery employ more labourers than their

neighbours. Such may be the case with first-rate farmers with plenty of capital, but when machinery came into common use the case would be quite different.

Third objection: The small arable fields, the crooked hedges, and the inferior farm buildings. The superiority of Scotland in these points arises from its having been uncultivated or only half cultivated till the middle of the eighteenth century, and the same circumstance accounts for the superiority of Northumberland Border, Lincolnshire Wold, and Lord Leicester's Norfolk husbandry. An uncultivated district can be divided into properly shaped fields, with good buildings, at a much less expense than one long cultivated, as in the latter there is the expense of demolition as well as of construction; and the profit and advantages in the former case will be much greater. The cause of small *arable* fields is, that they were formerly pastures, and when broken up the landlord would not allow the hedges and hedge-row trees to be grubbed up. Another advantage is, that new land, improperly called waste, is often in reality much more fertile than soils long cultivated; and in Scotland there was no old turf—the English landlord's boast, the tenant's annoyance. The cause of the sudden and immense improvement in Scotch farming was good communication, by new roads, canals, &c., to a good market —England. Thus they had all the advantages of a large population in high prices and a constant demand, without any of its disadvantages in poor-rates, taxation, &c. The supply of tenants being less than the demand, Scotch landlords were obliged to act liberally in giving long leases with liberal covenants. On the strength of these long leases, the banks advanced money in paper currency, and immense improvements were effected; but it was English markets and English prices which originated and held up everything. Scotch farming may be compared to American government. What the English farmer obtained from *his* landlord slowly and with difficulty, the Scotch—having new ground to work on, and no drawbacks and opposing powers—did quickly, and at a bound. Both Scots and Americans could take all the best English practices, and improve on them, and omit the worst ones.

Fourth: The Scot says, that from his good farming he can pay a much higher rent. But he does no such thing, for the Scotch acre is more than one fourth larger than the English; and although some of the more fertile spots near the large towns may seem to let for more, it will be found that the English pay a much higher sum altogether. The Scotch rental includes everything; the Englishman has to pay tithes and rates beside. Taking the State taxes and applying them to the average, we find they amount to £1 5s. per acre in England; 5s. in Scotland. Tithes are 2s. an acre in England; in Scotland, 3½d. Poor-rates 3s. an acre in England; Scotland, 1½d. Road and county rates are probably more on an equality.

Fifth: The next objection of the Scotch is, that they pay higher wages to the labourers. Granted; for the same reason that the wages in Northumberland and Lincolnshire are higher than those of Devonshire; and the wages in America (although food is so cheap there) are so much higher than any in Great Britain. English wages are paid in poor-rates, and the cost of a superabundant poor is much greater than is set down in the rates. Thus inefficient workmen are employed merely to keep them off the parish; married men are paid more than single; and the old plan, where wages were made up from the rates, so that workmen were paid not according to their goodness, but according to their number of children, is an exact counterpart of the modern French communism. I have heard an excellent farmer, in a parish where rates were high, observe that he could not employ men at piece work, as he wished to do, because they would do too much; there would not be work for all his labourers. Again, the poor-law prevents improvement: a farmer dare not send for a good workman from a distance, to improve his men in any manual art, as draining, two-horse ploughing, &c. &c. or introduce something new, as irrigation, because he would throw his own people out of employ, and perhaps have his new workman gain a settlement. The poor-law causes that if a workman be ever so bad, he is sure of work or support; and if ever so good, he gains little more. It is an encouragement to indifferent workmanship. The multitudes of women employed in reaping, hoeing, &c., in Scotland, is a great addition to the family earnings there, but in England there is no place for them. The emigration of so many Scotchmen to England may be one cause of this Scottish practice, and no doubt drives many English to the workhouse, though not so many as the prodigious influx of Irish. Besides this, in England the entire families of farm labourers depend on what the father earns: suppose his wages are rather larger than formerly, he is still a loser; for his wife and family earn nothing now by spinning. The monopoly of manufactures has caused that every widow and lone woman becomes a burden to the parish. That it is the superabundance of labourers that causes the low wages and pauperism of the English poor, is plain from what happens at harvest. Labourers are then in request; the usual demand and supply being reversed. It is as if England were America for the space of a month. Wages increase double or treble. Every labourer is now of value; paupers leave the unions, and Irishmen are no longer a nuisance.

Sixth: The objections of the Scotch in points of practical culture—that not more th an two horses are used in ploughing some lands, that some soils are ploughed more shallow than in Scotland, and the inferiority of the turnip crop—have been satisfactorily answered for reasons of soil and climate; in the Royal Agricultural Society's Journal. Of the objections made by English to Scotch farming, 1 is the slovenliness of it in many things (but this is caused by the too limited number of labourers); 2, the Bothie system (caused by the same reason, and not at all to be condemned, when the young men are well lodged and cared for); 3, the immense wastes covered with heath, capable of being reclaimed. But why should they be reclaimed, when, on account of the limited population, they are not yet wanted? 4. The truck system (paying labourers in meal, &c.), a plan neither to be praised nor condemned, as it is and must

be practised wherever money is scarce and produce plentiful—as America for instance. America as thickly populated as England, her people would be as pauperized and as badly paid. England, as void of manufactures and commerce as Ireland, would be as miserable. In these instances change of Government or Ministry can have no effect.

It is the immense deficiency of the supply to the demand of farms which gives the landlords the power in preserving game, &c. Let their covenants be ever so restrictive, and even more so than at present, they will never be at a loss in letting their land. This is the cause of the greater liberality and long leases of Scotch landlords, of the tenancy at will and subserviency of English tenants, and of the still greater subserviency of Irish ones. Every other class—professional men, tradesmen, mechanics, and labourers—have increased with the increasing wealth and population of England. Only landowners and farmers have decreased. Almost all the small estates, from 30 to 100 acres, farmed by their proprietors, have been bought up by the large landowners; almost all small farms have been done away with. What has become of the tenants? Some, no doubt, bailiffs; others getting a poor living by jobbing in ploughing and carting, and by letting out drills and thrashing-machines; many have become farm labourers; many, I am afraid, gone to increase the vast amount of pauperism. Another reason is that of one farmer holding a plurality of farms; some as many as ten. I do not complain of this, but merely mention it as accounting for the immense competition for farms, and the consequent power the landlord has in naming his conditions of letting them; for the class of *farmers* have an equal tendency to increase as any other class, and *farms* are probably only one-half the number that they were fifty years ago.

W. R.

June 1, 1848.

WEST HEREFORDSHIRE FARMERS' CLUB.

On Tuesday, 23rd May last, the annual sheep-shearing of this society came off in a meadow adjoining the Lion Inn, Bredwardine. The weather being delightful, there was a strong muster of members, with many friends from a distance. The number of candidates for the prizes was not so great as usual, but it was generally acknowledged that there was an evident improvement in their work since last year. Mr. Martin, of Brobury, and Mr. Brown, of Whitfield, officiated as judges on the occasion; and, from the closeness of the competition, they must have had an arduous task to perform. Three prizes for men and one for boys were awarded. After the conclusion of the shearing and the distribution of the prizes, the members with their visiting friends adjourned to their room, and some preliminary business of the club being completed, Mr. Rowan, of Hereford (who had kindly acceded to an invitation previously given by the secretary), proceeded to deliver a lecture on Agricultural Chemistry, combined with experiments showing the formation of the gases of which the organs of plants and animals are composed, explaining their origin, their combinations, and the manner of their assimilation, of which the following is the substance:—

Gentlemen, from the high standing which chemistry has taken amongst the various branches of natural philosophy in these modern times, from its general usefulness in every department of civilized life, from the growing desire in the minds of almost all trades and professions to know something of its principles, from the increased number of its students, and the vast field that yet lies unexplored before its admirers, and particularly from the growing desire in the minds of those persons who are engaged in the pursuits of agriculture to acquire some knowledge of its application to their art, I feel pleasure in having an opportunity of lending my feeble aid to disseminate even the rudiments of such an interesting and useful science—a science by the aid of which we can solve the most difficult problems which nature presents; we can understand the nature of the elementary particles of every compound body of which this earth is composed and the atmosphere around it, and understand the reason of its adaptation to the support of animal and vegetable life; it teaches us the combining proportions with which simple bodies unite with each other, and it gives us the means (in agriculture) of ascertaining the cause of those phenomena which, though of constant occurrence, are yet inexplicable to the mere practical man. I have said that chemistry teaches us the nature of matter; it is divided by chemists into decomposable and undecomposable; the decomposable is matter in a compound state, and the undecomposable is matter in a simple state. A piece of iron is matter in an undecomposable state, because it cannot be reduced to a simpler form; but the rust of iron, or its oxide (as it is called), is matter in a decomposable state, because it is composed of elements which can be separated from each other—it is composed of iron and oxygen. Every substance we come in contact with is either a simple or compound body; of one element, or compounded of two or more of the fifty-four elementary bodies at present known. These simple or elementary bodies are capable of

uniting with each other in certain proportions, and are the same part of compounds that letters are of words. Thirteen of those elements are alone necessary to vegetation, namely—oxygen, hydrogen, nitrogen, chlorine, phosphorus, sulphur, sodium, potassium, magnesium, aluminum, calcium, manganese, iron—these combine to form the organic and inorganic parts of plants, which is another division introduced by chemists, which I will explain after I have mentioned a third division of matter, viz., solid, liquid, and gaseous. Solid bodies are those which have a particular form, such as soils, stones, ores, &c., and the particles of which are with difficulty (or not) moveable among each other. Liquids are such as take the form of the vessel in which they are contained, such as water, alcohol, &c. Gaseous bodies such as air, hydrogen, oxygen—take no particular form, but fill, by the repulsion of their particles, the vessel in which they are held. Some bodies in a liquid state combine to form solids; gaseous bodies unite to form liquids; and there are continually going on in the laboratory of nature changes of this description. Elementary bodies unite with each other by what is called the force of chemical attraction or cohesion, as distinct from mechanical attraction. To produce the former, many things are requisite: they must have an affinity for each other; they must be within the sphere of their attraction; and they must be separated from contact with another body having a greater affinity for either. Chemical attraction differs from mechanical attraction chiefly in this, that if two pieces of phosphorus are rubbed together they will unite, but they are still phosphorus. But if two bodies are united by chemical attraction they form quite a different substance, possessing different properties from either. Two gases may be mechanically combined, and yet each possess the same properties; but if chemically combined, they materially differ; for instance, oxygen and nitrogen are mechanically combined to form atmospheric air; but if a succession of electric sparks are passed through them, they unite and form nitric acid or aquafortis. Then there is elective attraction, or the affinity which a simple body has for a member of a compound body, by which the original compound is decomposed and a new compound formed; or the same takes place between two compound bodies, by which sometimes two new compound bodies are formed: for instance, in the decomposition of vegetable or animal matter, water is indispensably necessary. The carbonaceous matter causes the separation of the oxygen from the hydrogen to form carbonic acid, and the liberated hydrogen unites with the nitrogen to form ammonia, and the carbonic acid again unites with the ammonia to form carbonate of ammonia. This gives rise to the pungent odour observed in close stables. Again, if gypsum or sulphate of lime is strewed in the stable, the ammonia parts with the carbonic acid in order to unite with the sulphuric acid in the lime, and the lime combines with the liberated carbonic acid, forming carbonate of lime. Thus two new compounds are formed on the principle of elective affinity. This is what is called double elective affinity. I have here a portion of carbonate of ammonia perfectly clear, and in this vessel a portion of solution of gypsum; when poured together they become milky by the formation of an insoluble carbonate of lime; and if hydrochloric acid (or spirits of salts) be poured upon it, it will effervesce, expelling the carbonic acid, and forming chloride of calcium and chloride of ammonia.

I have stated in a former part, that the chemical elements are divided into organic and inorganic, or, in other words, that chemistry is divided into organic and inorganic chemistry; and in the analysis of plants and animals, we have to investigate separately their organic and inorganic elements. Some persons have found fault with the terms used by chemists to express their ideas, but I can assure you there is scarcely a term used that could be replaced by one more suitable. The terms vegetable and mineral have been substituted for organic and inorganic, but it is a very unsuitable change; for vegetable would convey the idea of both organic and inorganic in one, as no vegetable can exist without both; but words are only of use in proportion as they convey correct ideas. The word organic expresses those elements which are necessary to the formation of the organs of plants and animals, namely—oxygen, hydrogen, nitrogen, and carbon; two or more of which are found in all plants, and they can be dissipated by a strong heat; whereas the inorganic comprises the other fifty elements, which cannot be dissipated with heat. I shall now turn your attention to the nature of the organic elements, and shall begin with oxygen. This is, I may say, the most important element in nature; it forms one-fifth of our atmosphere, and by some writers it is said to form four-fifths of the whole globe. It is a supporter of combustion and of animal life; it was discovered by Dr. Priestly. I have here a portion obtained from a substance called chlorate of potash, which is a combination of chlorine, oxygen, and potassium—one part of chlorine, one part of potassium, and six parts of oxygen. By the application of heat to the substance contained in a retort, it gives out all its oxygen, which is collected in this receiver, and the substance remaining is then called chloride of potassium: it can also be obtained in many other ways. After performing some pleasing experi-

ments, the lecturer went on to say: It forms a fifth of our atmosphere (as I have said), and when it is removed from atmospheric air, as I shall show you when treating of nitrogen, the air will not support combustion; it forms a third in bulk, and eight-ninths in weight of water, hydrogen forming two-thirds in bulk and one-ninth in weight; it forms a portion of the organs of all plants, and is taken in by the leaves of plants in combination with carbon, forming carbonic acid, and gives off a great portion of the carbon, being fixed by the rays of the sun.

Hydrogen is another of the organic elements; it is the lightest of all substances; it burns in an atmosphere of oxygen, forming water, but will not support flame; it can be obtained by the decomposition of water, either by pouring diluted sulphuric acid on zinc or iron filings, or passing the steam of water through a gun-barrel containing iron filings or wire, and heated to redness. I have a portion contained in this gas-holder, obtained from the latter source. It also forms a part of the gas burnt in our towns, being combined with carbon, and called carburetted hydrogen. Being burnt alone, it produces heat with little light, but when passed through a sponge containing naptha, which impregnates it with carbon, we obtain light. When I depress a dry glass over the flame during its combustion, water is formed, which is seen to moisten the inside of the glass; and if a portion of it is put into a bottle containing oxygen, and a light applied, a violent explosion will ensue. Nearly all the metals, by their oxidation, liberate hydrogen.

Nitrogen, another of the organic elements of plants, is lighter than atmospheric air, of which it forms four-fifths of it bulk; it can be obtained by mixing together a quantity of sal ammoniac with half its weight of saltpetre, which is called by chemists nitrate of potash. In this process a double decomposition takes place; the sal ammoniac, which is a combination of chlorine and ammonium, transposes with the nitrate of potash, a new compound is formed, and nitrogen is liberated. The ammonium of the sal ammoniac is composed of nitrogen and hydrogen, one part of the former and four of the latter; and the nitrate of potash is formed of one part or atom of nitrogen, six parts of oxygen, and one part of potassium. The hydrogen of the ammonia unites with the oxygen of the saltpetre to form water, and the chlorine of the sal ammoniac unites with the potassium, forming chloride of potassium, and the nitrogen is set free. The simplest means of obtaining nitrogen is by the decomposition of common air. I have here a jar of atmospheric air, and by burning a piece of phosphorus in the jar over water, the oxygen is abstracted to unite with the phosphorus, forming pyro-phosphoric acid; it forms in white fumes, which are absorbed by the water, leaving the nitrogen nearly pure. Now if I put a lighted splinter of wood into it, it will be instantly extinguished, not in consequence of the presence of nitrogen, but in consequence of the absence of oxygen. It is not a supporter of combustion, nor of animal life, nor will it burn like hydrogen. It forms four-fifths of our atmosphere, and in thunder storms, after long droughts, it is combined with the oxygen, forming nitric acid, which falls in the rain, and coming in contact with saline matter, which is often observed crushed on the surface of the ground, forming what is called the nitrates of those substances, and is the chief cause why meadows look so green after thunder storms. Nitrogen is essentially necessary to the cultivation of some plants, especially those strong smelling ones, such as onions, leeks, &c. The chief source from which it is obtained by plants is either ammonia or nitric acid, but principally ammonia, which is formed during the decay of animal and vegetable matter containing nitrogen, which unites with hydrogen, forming that substance. Its composition is one atom of nitrogen to three atoms of hydrogen, and by chemists is expressed by the formula N1 H3.

Carbon, the other organic element, exists in nature in great abundance. It forms the chief part of all trees and plants; it exists in a free state in nature, as the diamond, coal, plumbago, &c. It forms a large proportion of all limestone rocks, in the form of carbonic acid, which is a combination of carbon with oxygen, in the proportion of one of the former to two of the latter. A portion always exists in the atmosphere, arising from the decomposition of vegetable and animal matter. It is heavier than atmospheric air, and may be poured from one vessel to another. It is not a supporter of combustion nor of animal life. If poured upon a lighted candle, the candle will become extinguished. An animal cannot exist in an atmosphere of it, but will instantly die. It is carbonic acid that collects at the bottom of deep wells and large beer vats, and renders it dangerous for persons to descend into them. It is formed in the combustion of charcoal, wood, coke, wax, tallow, &c. If a portion of it is passed through clear lime-water, it will be rendered turbid by the formation of carbonate of lime. The same result takes place if air from the lungs is blown into the lime-water, in consequence of the exhaled breath being loaded with carbonic acid. The manner in which plants take in and assimilate carbon is remarkable. By expanding out in the air their broad leaves, the under sides of which contain a great number of little mouths, the plants thereby draw in the carbonic acid; the rays of the sun falling upon the plant abstract or liberate the oxygen, so that there is a continued process of analysis and appropriation

going on in the living plants. Water, ammonia, and carbonic acid, are the chief sources from which they obtain their organic elements; water supplying the oxygen and hydrogen; ammonia supplying the nitrogen; and carbonic acid the carbon; the whole of which (in the natural state) is supposed to be derived from the atmosphere. As agriculture, if properly carried on, is more an artificial than a natural system, we endeavour to create other sources for the obtaining of those elements. We supply manure, rich in carbonaceous and nitrogenous matter, which, in their decomposition, become soluble in water, and are taken up by the roots of the plants; thus a saving of time is gained by the farmer. By proper manuring, the crop is ripened much sooner; the plant is supplied with organic and inorganic food in due proportions; and those parts of plants which are more necessary for the food of animals are forced to a greater size, and better than they would be in their merely natural state. In this respect chemistry is of the utmost advantage to the farmer; for by chemical analysis of the different parts of plants we ascertain the elements and their proportion in each separately, and are enabled to supply them in the shape of manure with those elements that are calculated to increase the growth of the parts of the plants more necessary for food. If a portion of land is in a high state of cultivation, and the whole of the crops grown thereon is consumed on the land, and restored in the form of manure to the soil, the farmer would not require to purchase an ounce of either artificial or natural manure from any quarter; but as that is not the case, and he sells constantly, to be consumed in the towns, the greatest portion of the richest of his produce, he is bound to supply from some source or other those organic and inorganic elements taken from his soil in the shape of grain, mutton, beef, cheese, &c. If he does not do so, year by year will his crops deteriorate in quality, until at length they will scarcely yield back his seed. It is astonishing what little knowledge is possessed by farmers on this important subject, and what ideas are entertained about what is called artificial manures, some arguing that they are positively injurious, tending to exhaust the soil and impoverish it; others, that they merely act as a stimulant does to the animal economy; whereas their efficacy depends solely upon their supplying to plants that of which the soil is deficient. If they ever act as exhausters, it is in consequence of their not supplying all the elements the plants require, as, for instance, would be the case with bone-dust, and, in a measure, with guano. Bone-dust can only supply phosphate of lime, ammonia, carbonate of lime, magnesia, soda, and but a trace of potash: it gives no chlorine nor sulphuric acid, and soda even is in a very small quantity. If not supplied, the soil will be exhausted of these substances, and the crops will not grow. The manure, to be effectual in its application, must in a great measure be natural, being the excrements of animals, like your fold-yard manure, and be combined in due proportion and in proper form that will meet the wants of the growing crop. What is it that gives value to the dung of your cattle? Is it not the food they consume? And is it not a fact, that the better the feeding, the better the manure? What is it that gives value to guano, but that it is the excrements of birds which have consumed food rich in the organic and inorganic elements of plants? No manure can be effectual that does not possess those necessary conditions. The inorganic elements are necessary, but are not effectual alone. A fertile soil, or a useful manure, must combine both in the form and proportion necessary for the growth of those plants we wish to cultivate. It is supposed by some persons engaged in agricultural pursuits that theory is at variance with practice; but this is not the case. If the theory is based on scientific principles, this would be impossible! for science is but the collection and classification of facts discovered by experiments—that is, by practice; and whenever the practice is successful, it is sure to harmonise with correct theory. If a manure be applied to turnips, and it prove successful, I will venture to assert that by the analysis of the soil, manure, and plant, it will be found that the manure and soil contain the same elements that are found in the analysis of the plant; and it can be demonstrated to a certainty that, although the farmer be utterly ignorant of the laws of chemistry, yet if he is successful in his art, it is because he acts in accordance with the principles of that science.

If such be the case (and who can deny it?) how important is it that farmers should become acquainted with it! If they fully appreciated the benefits that would accrue, they would endeavour to follow the example of a neighbouring county, and not content themselves long without tutors to instruct their sons in this interesting and useful art. An opportunity did occur of late wherein, the surplus revenue of a defunct society might have been vested in the hands of some trustworthy persons for this purpose, and would have been a foundation for a superstructure to benefit generations yet to come. Your soils and manures could then be investigated by your own sons, at a trifling cost, and you would be secured against the impositions of men who enrich themselves at your expense. Agriculture would not long be the empirical art that it now is; experiments would be carried out under the light of science; new discoveries would be made; and that ancient and honourable occupation,

the cultivation of the soil, would eventually be understood with as much precision as the traversing of the trackless ocean, or the determination of an eclipse of the sun (applause.)

At the conclusion of the lecture, Mr. Mathews, of Blakemere (the honorary secretary to the club), rose, and in proposing a vote of thanks to Mr. Rowan, stated that, although it was said that it required a good deal of moral courage in a man to acknowledge himself in error, yet he did so gladly on the present occasion, for before the lecture he had formed the opinion that the science of chemistry was of such a nature that a lecture could not be delivered on the subject in language that could be understood by persons who had not paid much attention to the subject. In that he was happy to say that he and others were mistaken; and he was sure that Mr. Rowan had acquitted himself to the entire satisfaction of every member present. He therefore proposed a vote of thanks to Mr. Rowan for his lecture. This proposition was responded to by all present. The lecture was given gratuitously.

Mr. Haywood and Mr. Ambury accepted the office of judges to award Sir V. Cornewall's premium of £5 for the encouragement of clean and industrious cottagers.

Mr. Ambury said he felt great pleasure in informing the club that his landlord, D. H. Lee Warner, Esq., had signified his intention of subscribing two guineas per annum to the funds of the society. He therefore proposed that his name should be added to the list of honorary members.

The proposition was seconded by Mr. Bennett, and carried amid much applause. The company shortly afterwards separated.—Hereford Journal.

ON THE REARING OF CALVES.

BY M. M. M.

Calf-breeding is generally an occupation thoroughly distinct from both grazing and feeding. When a soil is too poor to admit of permanent grass-feeding the animals, or where there is a deficiency of grass altogether, the farmer breeds a certain number of calves. His sources of nourishment are of a description quite calculated to rear them, but quite inadequate to feed them. At one year old, or in some cases two, they are carried to some district fair, and there met by the dealers from the feeding counties, and thus meet purchasers. The profit of the beef-manufacturer is thus divided: the calf-rearer is the producer of the raw material—the carcass, muscles, sinews, and bones; and the grazier is the manufacturer of fat, who takes this raw material, and finishes its production.

The breeder is, however, an impoverisher of his soil, unless he purchases artificial food. The muscle must be supplied by exhausting his supplies of his azotized materials, his phosphates, and his alkalies. Professor Playfair and Boeckman give the following as the composition of dry beef, in organic elements:—

Carbon	51.83
Hydrogen	7.57
Nitrogen	15.01
Oxygen	21.37

This, with 4.22 parts of ashes, completes the 100 parts. Enderlin (*Annalen der Chemie*, i., 62) thus gives the analysis of the ashes of the flesh of the calf:—

Phosphate of soda	30.18
Chlorides of sodium and potassium	52.65
Sulphate of soda	2.94
Phosphates of lime and magnesia	3.49
Oxide and phosphate of iron	9.28
Gypsum and loss	1.46
	100.00

Taking the bones, we find much the same rule applies. Varying as they do, we may give this as an average (organic materials):—

Carbon, about	50
Hydrogen	7
Nitrogen	17
Oxygen	25

Then the ash contains something like

Phosphate of lime	50.6
Carbonate of lime	4.5
Magnesia	0.9
Soda	0.3
Potash	0.2

The above are given of Dr. Thompson's analysis of the bones of the ileum of the sheep; but it is probable that he has made the phosphate appear as phosphate of lime alone; though it is more than probable that the phosphoric acid is combined both with the magnesia, the soda, and the potash. Still, however, the principle applies; and assuming the animals, when sold off, to weigh on an average, in flesh and bones, 16 stones, and that of this weight 12 stones are flesh and 4 are bones. We have not only omitted the entrails, &c., in our estimate, but have placed a low average weight; still,

this is of little consequence, as this small estimate will show how a farm is robbed. Assuming that 10 head of these animals are bred and sold off per annum, and adopting the above as a basis, we shall annually remove from the farm as much as 320 stones of matter, consisting of 80 stones of bone and 240 stones of flesh, &c. The hydrogen of which the organic materials are composed may be had from water, the carbon from food, and the oxygen from the air: the nitrogen comes evidently from the farm. Of this element,

	Lbs.
80 stones of bone will remove	190
240 stones of flesh, &c.	504
Total nitrogen carried off by 20 animals	694

Then, of the mineral portions, are removed by 80 stones of bones—

	Lbs.
Phosphate of lime.....	366
Carbonate of lime	32
Magnesia	6.5
Soda	2.16
Potash	1.4

By 240 stones of flesh—

Phosphate of soda.....	3.20
Chlorides of sodium, &c.....	3.31
Sulphate of iron,.....	0.31
Phosphate of lime and magnesia..	0.37
Oxide and phosphate of iron	0.98
Gypsum	0.15

Hence it will appear that the principal robbery of the soil is in the phosphates, of which about 369lbs., or as much as exists in 10 acres of wheat at 30 bushels per acre and 63 lbs. per bushel are removed.

The grazier who buys grown animals, however, does no such thing. He adds nothing to the bone, and little to the muscle: the most is the growth of hair and horn, which is very trifling. He lays on *fat*, which, being composed of

Carbon	71
Hydrogen	69
Oxygen	7

does not de-nitrogenize, and contains perhaps hardly any mineral matter, so that the whole of the fertilizing matter of the fed animals capable of sustaining vegetation, or nearly so, is returned to the soil in the *ejectamenta* of the animals.

From the above it will be seen how necessary it is to supply the young calves on breeding farms—for such farms there must necessarily be—with artificial food abundant in the phosphates and in nitrogen. For the former, linseed is foremost. Leo Meir makes it contain, of soluble albumen, 15.1; of insoluble albumen, 3.7; and of fatty matter, 3.1; in all 21.9, or about one-fourth of nitrogenized matter. The phosphates are, however, as essentially necessary; and we know no mode of supplying them better than by wheat-meal in some of its combinations. Without the phosphates, the calf cannot form muscle or bone; and hence the bad policy of supplying barley-meal or oats, the former of which contains but half as much of the phosphates as wheat, and the latter only one-sixth.

The materials usually employed are new milk, skimmed milk, meal-porridge, linseed-tea, and, for solid food, hay, grass, turnips, meal, potatoes, mangel-wurzel, &c., &c. Some breeders, whose object is the calf, and the calf alone, sacrifice every other consideration to it. The breeders of short-horns, whose early maturity require a corresponding early supply of nutritious food, generally apply nature's own provision, and allow the calves to suck either their mothers or some other dam, or in some cases more than one, in order that they may develop their precocious and distinctive qualities; and they often continue this for several months—as many as six to twelve. Haidlen gives the ash of milk in 1,000lbs.—phosphates, 4.55; chloride of potassium, 1.83; chloride of sodium, 0.34; and free soda, 0.45. We have no analysis of the nitrogen in milk; but Schlossberger determined the nitrogen in cheese to be as much as upwards of seven per cent. in some specimens, and hence we may infer it is an important element in the milk.

This is, however, an expensive mode of feeding for those who rear only ordinary cattle for the market; and some are so "stingy," that, as soon as the cow ceases to give "beastings," they begin to give the calves the skimmed milk. A process of this kind does irreparable injury to the young animal.

The best mode in ordinary calves, is to give new milk for at least fourteen days after calving. There are two modes of doing this: either allowing them to suck the dam; or removing them as soon as calved, and training them to drink in the first instance. For ourselves, we think the taking away of the calf both cruel and unnatural. The healthiness of the mother, we consider, depends upon it. After calving, it is only necessary to see the anxiety and care for her offspring, which makes her forget all her pain, and diverts her attention from her sufferings; whereas, if you discover the gloomy excitement of losing it, it is no wonder that milk fever and inflammation so often supervene. We invariably allow the presence of the calf for at least a fortnight. We allow the mother to lick over the whole of the offspring; and we think that a privation of this medicine of nature is a cause of many a valuable animal being lost. After the first fourteen days, we mix one-half new milk and one-half skimmed milk for fourteen days more; then the skimmed milk is scalded, nearly to the boiling point, then set aside to cool, and given to the

animal. One great secret in the successful rearing of calves is to give them small quantities at a time, and these frequently; for the first fortnight it ought to be served at the very least four times per day, and about a quart at a time will be necessary, to be increased afterwards as the animal's wants may require. So soon as the skim-milk time commences, the animal, if properly trained, will begin to eat the solid food.

The teaching of them to eat is a less difficult matter than the training of them to drink. Nature presents to them first a sucking, and then a drinking process; and in general, in training them to drink before their time, it is necessary to use the finger, and introducing this into the mouth, plunge the whole into the milk; the calf sucks the finger, and thus imbibes the milk. By and by the finger is withdrawn, and the calf drinks alone and unassisted.

The eating process is somewhat differently taught. A piece of fine hay is tied together with a string, and suspended in the calf-crib; thus the calf begins to suck this bunch of hay, and, part of it coming out from the string, the calf is gradually taught to eat.

Some parties tie up the calves by the neck in stalls and other places; then in loose houses. We prefer the latter course. The exercise the animals take is beneficial to their health; and, on the whole, we much prefer this partial freedom.

The supply of milk, however, is on most farms limited. If the farm is not for dairying purposes, the milk cannot be spared; and if new milk cheese is made, it is equally in request. Hence substitutes for milk have necessarily to be adopted. *Hay tea* is one of the substitutes sometimes used for milk. We think it generally a poor one. If it has been grown on very rich alluvial soils it is best; but there is every probability that the bitter extract may, with the colour, deceive, and lead to the belief that it is very nutritious. Taking good meadow hay, and deducting 44 per cent. for woody fibre, the saline matter (varying from 5 to 10 per cent.) being also probably most of it held by the organization of the plant, it leaves say about 50 per cent. of starch, sugar, gum, gluten, albumen, legumen, fatty matter, &c. Much of this, however, is retained in the organization of the hay; and we much question if it is ever an economical practice. Many parties make a point of boiling the hay; but we are not certain that there are any great advantages: Mr. Parkinson's plan is about the best we are acquainted with. "This tea is made by placing a quantity of good hay (if it has had a sweat in the stack, is of a brownish colour, and feels clammy like tobacco, the better; but all hay should have that glutinous feel to be fattening) in a tub, pouring boiling water upon it, and covering it up to keep in the steam. It ought to be prepared twelve hours before using; when, the milk being boiled, it should be added till the mixture is reduced to a proper heat."

We believe our principle of extraneous food for calves alone is by far the best, both for the sustaining of the animals and the soil in condition; and hence we will refer to two or three media which are available, and on which we have successfully reared calves for several years.

1. *Wheatmeal Porridge.*—This is made in the following manner: Two gallons of water are made to boil, and then a pint of fine flour is mixed with cold water sufficient to make it into the consistency of thick cream. This is thoroughly mixed, and put in a bowl capable of holding half-a-gallon; a small quantity of the hot water is introduced to the mixture, and stirred, so as gradually to raise the temperature of the flour and water in the bowl, and prevent it running into lumps. This is plunged into the boiling water, and stirred until the whole again boils. This coagulates the mass, and forms a thick nutritious porridge. It is a great advantage if one-sixth part of cold skimmed milk is then plunged into the mixture; which not only gets scalded itself, but very materially improves it. Two gallons of the mixture per day will be found generally sufficient.

2. *Linseed Jelly*, combined with the milk, is a very valuable auxiliary. We ourselves have scarcely tried the seed alone to be able to give a very decided opinion upon it; and we must be excused if we state, that we prefer the pressed seed in the shape of *cake* crushed to powder. Our reason is this. If we wanted to lay on *fat*, we should give them the crushed seed, because its fatty matter would be easily, when cooked, assimilated into animal fat; but when bone and muscle are to be formed, every pound of fatting matter in the food supplies the place of other substances calculated to build up the animal structure; and hence we approve most of the jelly produced by the crushed cake. The proportions of the crushed cake to the water are as follow: To two gallons of water take two pounds of oilcake, bruised or crushed nearly to powder, sprinkle it in the water, stir, and allow it to boil ten minutes. Cool with skim milk, if convenient. A rich jelly-like mass, of the most nourishing kind, is produced; and all these mixtures should be given lukewarm.

3. *Broth Porridge.*—This is a somewhat unnatural mixture; but it is often used very successfully combined with other mixtures for calves. The water in which bacon is boiled is carefully preserved, and diluted with perhaps one-half of its quantity of water. It may be expected that a sub-

stance like bacon, from which nitrogenized and phosphoric matter may be expected to be dissolved by the action of boiling, will be of use; but to make it alimentary it is necessary to mix it with a considerable proportion of milk. However unnatural this may appear, how contrary soever to all theories of natural history it may be to give carnivorous matter to herbivorous animals, we may find in it an analogy by no means unimportant in the disposition evinced by mature animals of this description to select and chew for hours together a piece of bone, which they will search for with instinctive pertinacity, and relinquish with difficulty. Is it not because she finds in it the nitrogen or the phosphates denied her in the food upon which she is confined? And if this be so, if she is guided by her instinct to select and choose an animal substance, why may not a decoction of animal substance be useful to the calves in their younger stages as an auxiliary, and to a certain extent a substitute for the beverage which nature has given them, but which man has deprived them of for his own immediate wants?

The solid food of the calves will soon displace much of the liquid. At five or six weeks old they ought to be trained to eat sliced roots. To do this it is only to supply them in convenient forms in a trough within their reach. Their moments of leisure are employed in playing with and sucking these pieces, until they begin to masticate them. They should be cut in oblong pieces, one inch broad, half an inch deep, and two inches long; these are better than either slices or squares, more adapted to their conformation, and more calculated to make them learn to eat of their own accord. Calves should be reared from the months of September to March. We do not approve of late bred calves; they are so tender that they require nursing the following winter if they are reared late. In the months we have named, turnips are always plentiful, or ought to be; or, if mangel-wurzel is cultivated, it will be found a very successful substitute; but we have never found anything equal to swedes. These appear not only to agree with the palate of the animal and to make it thrive, but exercised a very beneficial effect on its subsequent development. Is it because they contain a large share of the phosphates? Sprengel makes the relative proportions of the phosphates in the swede to be nearly six times as great as in the common turnip, and sulphates ten times.

	Phos. Acid.	Sulph. Acid.	
Common turnip ..	73	41	Per
Swedes	408	890	1,000lbs.

Other auxiliaries are sometimes adopted, as beanmeal, peameal, oatmeal, and cattle sago and Indian corn; all being very material aids in rearing calves, which may or may not be adopted, according to the expense. This is the great question. It not unfrequently happens that some peculiar root or grain may be purchased at a much cheaper rate than the produce of the farm. If to this is added the cost of carriage and of preparation, and the difference is found material, it may be purchased with advantage.

The *diseases* of calves are not very numerous. The scour is one very prevalent, and often, especially in travelled calves, very fatal. It generally originates in some acrid substance acting on the bowels. The veterinary surgeon is seldom sent for to calves; and the recipes of catechu, chalk, alum, oak bark, and all those lists of powerful astringents which disgrace every farmer's domestic pharmacopœia, destroy far more calves than they cure. The effort of nature to cast off the acrid substance needs to be assisted and not retarded; retard this by astringents, and she has to overcome two obstacles to cure—the acrid substance in the bowels, and the astringent which locks it up there. We just reverse this. We let the scour alone for a day or two, and it generally goes off; if not, as the calf is a vascular animal, and soon gives way before continued disease, we administer half an ounce of sulphur. This never fails—at least we never knew but one instance, and it certainly did baffle its effects. The scour continued until the animal began to be prostrated. What was to be done? We administered a bottle of good old crusted port; and the almost dying animal rallied, and recovered from that hour.

Sowerby, Thirsk, May 3, 1848.

ON A VARIETY OF ITALIAN RYE-GRASS.

BY W. DICKENSON.

To Lord Portman.

My Lord,—Your Lordship's request that I should furnish the readers of the Royal Agricultural Society's Journal with all the information I possess as to the culture of Italian rye-grass is the only apology I shall offer for troubling them a second time on that subject.

In the first instance, I had to communicate a new method of cultivating a peculiar plant, the result of

which was as startling as it was new, whereby nine or ten crops of excellent green food had been obtained between March and December; being cut in the former month and watered with liquid manure, consisting of one-third of pure horse urine and two-thirds of water, distributed from a London street water-cart passing once over the plant immediately after the grass was cut, one watering being sufficient for one crop. That report created considerable interest, and induced noblemen, gentlemen, farmers, and traders to test the system with the same object, the result of whose practice upon various soils, with different treatment, I now propose to lay before the readers of the Journal, feeling assured there is matter well worth the consideration of practical agriculturalists. I think it important that all the information I have been able to collect, bad as well as good, should be set forth; if, therefore, my paper is somewhat tedious to read, it may be a palliation to know it was much more troublesome to collect.

The method I then recommended was to prepare the land by ploughing, cleaning, and reducing it to a fine surface in the month of August or September, to sow by a broadcast machine two bushels of seed per acre (three, I think, is better, sown at twice by crossing the land with one bushel and a half each way), or four bushels per acre by the hand, to harrow lighty in, handweed the first growth, and, as soon as there was about 18 inches of grass, to cut it for green food; watering the plant with the liquid day by day immediately after the grass was removed, and so continue to cut and water, cut and water, from March till November. The plant is a biennial; after two years the land may be ploughed and resown if required: it will be seen in how few instances this plan has been adopted, and, when it has, in almost every case, in all kinds of soils, success has followed the operation.

I have applied to about 90 persons, to whom I supplied seed, for information, and have received 44 answers; 12 of which give no information at all, and so must be omitted.

I shall now proceed to the details, classing the reports into soils and subsoils, showing the means used and the amount of produce obtained:—

1. *Sand upon Limestone.*—Shallow and hot; entirely failed.—Hon. P. J. Pierrepont.

2. Sown August; no manure, no urine; first crop 3 feet high in May; second, 2 feet 6 inches first week in August.—Rev. Thomas Cator.

3. *Light Dry Sand upon Red Sand.*—Sown September; no urine; produce, two crops, each 18 inches; as hay one ton and a half per acre.—His Grace the Duke of Bedford.

4. *Light Soil, Sandy Subsoil.*—Sown October; light dressing, stable-dung ploughed in, and dressed after cutting with tank-water from the vallage; seven crops; fed twice; mown twice, with three feet 6 inches of grass to each crop; fed twice again, and had 16 inches of grass standing September 14; the crops weighed as green food 30 tons per acre.—J. Whitworth, Esq.

5. *Red Sandstone.*—Sown September and October; dressed with 13 cwt. of Ichaboe guano to the acre, and produced a net profit of 7*l.* 9*s.* 8*d.* per acre. This valuable paper is attached entire, and is highly recommended for perusal.—Capt. Buller.

6. *Sand, Subsoil Stonebrash, 12 inches of Sand upon Stonebrash.*—Sown September; dressed with farm-yard liquid; two crops; one cut green, and one for seed; as hay, 25 cwt. to the acre.—R. S. Holford, Esq.

7. *Sandy Loam upon Sandstone Brash.*—Sown October; dressed with rotten dung before sowing in the spring with 2 cwt. of guano to the acre, and with tank-liquid after first crop; two crops; one 18 inches, one 14 inches high.—C. Walker, Esq.

8. *Sand upon Gravel.*—Sown September; 3 feet sand upon gravel; dressed with rotten dung; two crops; May, 2 feet of grass; July, 1 foot and thin.—Thomas Turner, Esq., President, Veterinary College.

9. *Sandy Loam, Open Subsoil.*—Sown February; dressed with urine before sowing, and 1½ cwt. of guano to second crop; three crops, 18 inches each, 20th May, 10th July, 10th September.—Thomas Bulmer, Fochabers, Gordon Castle, Scotland.

10. *Light Soil, Gravelly Subsoil.*—Sown November; dressed with farm-yard dung in October; no urine; three crops; 3 feet of grass to each.—C. Porcher, Esq.

11. *Loam upon Gravel.*—Not drained, no manure, no urine, except upon small quantity, and considers crop would have been treble with plenty of urine; fed with ewes and lambs in spring; yielded two crops, one of seed; 172 bushels off 3 acres.—G Wood, Esq.

12. *Heath upon Hard Native Soil.*—Sown October; dressed with farm-yard manure ploughed in, and guano dissolved in water; two green crops six weeks apart; a third crop of seed; grass very long, and now feeding it off (September 17).—Lawrence Wylie, Esq.

13. *Light Black Mould upon Yellow Sandy Loam and Gravel.*—Sown September; dressed with cows' urine, house drainage, soapsuds, water-closets and farm-yard water. Four crops: April 14, June 8 (cut too late, and made into hay); August 6, for seed; and September 10, grew so strong, and so covered the land, it killed all the weeds. First crop 2 feet high, and as thick as it could stand upon the

land; was ready earlier than rye on one side of it, and lucerne on the other.—Robert Gunter, Esq.

14. *Light Soil, and various Subsoil; Light Surface upon Sandy Marl.*—Sown October; drained 3 feet; dressed with farm-yard dung before sowing, and with urinal dressing after each cutting; three crops, 3 feet each.—W. Heap Hutchinson, Esq.

15. *Sandy Loam upon Clayey Chalk Marl.*—Sown October; drained 3 feet deep; no dressing, no urine; three crops up to August 23, each 2 feet 4 inches high.—G. Gilliatt, Esq.

16. *Loamy Subsoil, Stiff and Sandy.*—Sown September; drained 2 feet 6 inches; no manure; four crops, 18 to 20 inches high.—Edwin East, Esq.

17. *Light Clay Loam.*—Sown September; not drained; dressed with tank-water after cutting; four crops in six months.—Rd. Dyson, Esq.

18. *Clay and Flints, Subsoil Chalk.*—Sown September; three quarters of an acre: not drained; lightly dressed with dung; no urine; kept forty-one year-old Southdown sheep from April 22 to May 25; cut for seed July 2; produce 37 bushels; cut for horse-food August 15, which it kept twenty-one days; the seed-crop made into a stack of hay 30 feet in circumference.—Rev. J. Phelp.

19. *Clay upon Gravel.*—Sown end of October; no drainage, no manure, no urine, and wet; one crop half a ton to the acre, and fed once.—R. Allfrey, Esq.

20. *Strong Surface Clay Subsoil, Stiff Marl on Clay.*—Sown in September; part drained, and part not; dressed on surface with dung, no urine; succeeded admirably in part, and failed in part.—G. Harrison, Esq.

21. *Good Loam, Retentive Subsoil.*—Sown in October; drained 30 inches, and subsoiled; dressed after first cutting with 10 tons of rotten dung, spread on surface; two crops of seed, 20 to 24 inches of grass to each.—W. H. Little, Esq.

22. *Stiff Loam upon Clay.*—Sown in September; drained 2 feet; London dung ploughed in; no urine, but used nitrate of soda after second with success. Three crops up to September, and partly fed; two first crops produced 6 loads of hay to the acre.—Josiah Hunt, Esq.

23. *Stiff Mould upon Stiff Clay.*—Sown September; partially drained; dressed part with tank-water, part with nitrate of soda, and part with guano. Three crops: April 28, 2 feet 6 inches high; June 1, 2 feet; July 1, nearly 2 feet, and thin.—Jno. Hoper, Esq.

24. *Sandy Loam upon Clay; Fresh Land.*—Sown October; drained 3 feet: no manure, no urine. Three crops: May 1 for hay; July 10, seed; September 8 for seed again, 2 tons per acre. Each crop of hay double any other crop of grass.—D. S. Hayward, Esq.

25. *Fresh Common Land upon Clay.*—Sown October; no drainage, no manure, no urine; four crops from April 4 to August 8.—J. Cheal, Esq.

26. *Heavy Loam upon Clay.*—Sown September; drained 30 inches; dressed lightly with turf and night-soil and watered with cows' urine. Six crops: March 5, May 1, June 8, July 17, August 19, end of September; each from 2 to 3 feet high.—Jas. Bowley, Esq.

27. *Sandy Loam upon Clay.*—Sown October; partially drained; dressed with stable-dung in October, and watered with urine and water. Four crops, 2 feet 6 inches to 3 feet high, and fed in November.—E. Tattersall, Esq.

28. *Strong Land.*—Sown the last week in October; badly drained; exceeding wet in winter, and hard as bricks in summer; each crop watered with cow-shed drainage. Three crops to July 3: cut in April rather less than 3 loads to the acre; in five weeks rather more than 3 loads to the acre; the third in seed, July 3.—Messrs. Noble and Mee.

29. *Strong Loam upon Clay.*—Sown August; drained 33 inches; dressed with dung and urine, part three crops, part four, and part five; with 14 inches on land in November; in March, 18 inches; May, 33 inches; July, 28 inches; August, 26 inches; one crop of seed.—J. A. Slack, Esq.

30. *Loam, Subsoil Clay upon Sandstone.*—Sown October; drained 2 feet 3 inches; watered, after each cutting, with tank-water, as long as the horses were in stable; afterwards 7 lbs. of guano were put into water-cart, and filled with water. Five crops: March 24, May 19, June 25, August 1, September 7. First, 14 inches of grass; second, 2 to 3 feet; third, 3 to 5 feet; fourth, same; fifth, 18 to 24 inches. Part of second crop, cut and weighed green, 16½ tons the acre; dried and made into hay, 4½ tons. Part of third weighed with the same result; fourth equally good; first and fifth estimated each at half.—W. R. Stansfield, Esq., M.P.

31. *Clay upon Clay; Strong Clay upon Yellow Clay.*—Sown September; not drained; dressed with stable manure before sowing; three crops, 18 to 20 inches high.—Messrs. J. and E. Walker.

32. *London Clay.*—Sown September; badly drained; dressed with slaked lime. In September fed with sheep, and one crop of grass 3 feet high. One or two lands watered with urine, with no better effect.—E. Spencer Trower. Esq.

Copy of a Letter from Captain Buller to W. Dickinson.

Sir,—I think I can give a satisfactory answer to your inquiries respecting the Italian rye-grass. The 20 bushels of seed which you sent to me last year were sown, at three different periods, on 6 acres of ground, part of my farm at Whimple, in the county of Devon,

half way between Honiton and Exeter. The ground is of moderate quality, on the red sandstone formation, worth from 35s. to 40s. per acre rental. This particular field had been only partially drained. In 1843 it was sown with barley and clover-seed; and in 1844 and 1845 it had been three times mown. In July, 1845, I ploughed it, and made what we call a bastard fallow. On the 13th of September I manured 2½ acres with 13 cwt. of Ichaboe guano, and sowed 8 bushels of grass-seed. On the 27th of September I manured 2½ acres more, and sowed 8 bushels more seed; and early in October I sowed the remaining acre in the same way.

The seed first sown came up remarkably well, and soon covered the ground with a luxuriant herbage. The second and third sowings were much thinner in the plant, and much less vigorous in appearance all through the winter. Still the whole field was of a luxuriant colour, and the appearance of the crop was much remarked by agriculturists in the neighbourhood. In the spring it grew most vigorously, but the excessive wet made it difficult to know what to do with it. However, on the 23rd of March we began to stock it with sheep. The grass was then about 18 inches high. The sheep were frequently removed in consequence of the rain, but an account was kept of the numbers and of the days; and by this account it appears that 2½ acres of grass kept fifty-three sheep and forty-eight lambs for fourteen days between the 23rd of March and the 2nd of May. On the 2nd of May we began to mow the remaining 3½ acres for the horses and bullocks in the yard. The produce kept eight large cart-horses, four feeding bullocks, and one bull, for thirty-five days. The horses were in constant work, and both horses and bullocks were kept exclusively on the grass: they appeared to like it, and did well. I should state that the bullocks had been previously kept on mangold-wurzel and hay, and the horses on hay, carrots, and corn.

In May I had the grass from one square rod of ground cut and weighed. The weight was 144 lbs., or 10½ tons per acre. We finished mowing on the 6th of June, when the grass was left for seed, which we began to cut on the 2nd of July. The seed was cut as it ripened; and the weather being fine, it lay in the swarth for one whole day, when the mowers quietly gathered it into small bundles or sheaves, tying it with the grass itself, which was about 3 feet in length.

As the seed shells very easily, I had provided some coarse cotton sheeting, which cost about 4*d.* a square yard, and had it stitched together in two pieces of about 20 feet square. These were laid down in the field, the sheafs nearest at hand laid on the sheeting, and lightly tapped over with the flail. The process is very simple, and two men and a boy will in this manner readily thresh 3 acres of seed in a day. It is necessary, however, to be very careful both as to the time of cutting and the time of tying up, or otherwise the best of the seed will be lost.

The five acres yielded 96 bushels of clean seed, and the remaining acre about 19 bushels—total 115 bushels.

As soon as the seed was threshed it was put into bags and taken to a large loft, where it was spread thinly over the sheets on which it had been threshed. It has a strong disposition to heat, and a man was constantly employed in keeping it turned, while in fine weather it was taken out and dried in the sun.

As soon as the seed had been cut and the ground cleared, the field was manured, part with good rotten dung at the rate of 10 loads per acre, part with liquid manure from the farm-tank, and the remainder with guano at the rate of 4 cwt. per acre; of these the guano seems to be most efficient and the solid manure least, but I rather think the liquid manure had been too much diluted. At this moment (Sept. 2) the grass is again running up for a second crop of seed, and may probably be fit to cut by the latter end of this month.

There were about five loads of straw, apparently of excellent quality, and not much inferior to hay.

I will now give an estimate of the cost and the produce of the crop. It is an estimate only; but I shall state each head, both of expense and return, separately, that others may form their own opinion and correct what may appear to them erroneous.

In estimating the keep of large cart-horses in constant work at 7s. per week I think I am under the mark, and I much doubt whether I usually keep my horses during the month of May for less than 10s. per week. In this, however, as in other respects, circumstances vary, and the correction is easy.

Dr.	£	s.
3 ploughings, 6 acres, at 7s. per acre	6	6
Rolling, dragging, working, and sowing, at 7s. per acre	2	2
1 ton 12 cwt. of Ichaboe guano, at 8*l.* per ton	12	16
20 bushels of seed, at 8s. per bushel	8	0
Carriage of ditto	0	10
Mowing, threshing, and carrying, at 10s. per acre	3	0
Sheeting	1	10
10 loads of manure, at 7s. per load	3	10
1 ton of guano	8	0
Watering with liquid manure	0	15
1 year's rent, rates, taxes, and tithes	16	10
Total	£62	19

Cr.	£	s.
53 sheep, 14 days, at 6d. per week : :	2	13
48 lambs, ditto, at 3d. per week : :	1	4
8 horses, 4 feeding bullocks, and 1 bull, 5 weeks, at 7s. per week each : :	22	15
115 bushels of seed, at 8s. per bushel :	46	0
5 loads of straw, at 25s. per load : :	6	5
Total : : : : :	£78	17
Expenses : : : : :	62	19
Balance : : : : :	£15	18
To this must be added the crop of seed now ripening, worth at least 20*l.* (say) : : : : :	£20	0 0
Straw : : : : : :	3	0 0
And a further crop of grass to be cut in October, or left as keep for sheep in the spring (say) : : : :	6	0 0
	6)44	18 0
Profit per acre : :	£7	9 8

I have estimated the seed at 8s. per bushel, that being the price that I paid to you last year, but by inquiring this day in London I find that the present market price is 11s. 6d. per bushel.

In the spring I intend to plough for oats. It is to be observed that so rapid is the growth of this grass that no weed can live or can seed with it. The ground seems perfectly clean, and I consider that in condition it has much improved, and that it will be in excellent order for oats.

Much as my expectations were raised by what I saw on your farm last year, I have no reason to be disappointed with the present experiment; and I am now about to sow 9 acres more for another season. At the same time, I think, there is one thing which, not being attended to, is likely to occasion frequent disappointment in the growth of Italian rye-grass. I think it is not generally sufficiently considered that no plant which yields an unusually large and valuable produce can be grown without an unusual supply of manure. No land will support without exhaustion crops of extraordinary burden with the ordinary supply of manure. I believe this rule to be without exception, and not applicable to Italian rye-grass alone, but to all heavy and at the same time valuable crops. I am led to this remark by what has already occurred, for when I have been asked what dressing I have used, and mentioned 9 cwt. of guano per acre, the reply has always been, "Is not this enormous?" To which I can only answer—"Look at the produce."

From what I saw at your farm last year, as well as from my own experience in this, I have a full conviction that upon good deep heavy soils, with abundance of manure, and especially liquid manure, it is possible to grow 40 or even 50 tons of rye-grass per acre in a single season; and if so, the question for a practical agriculturist is, What is the value of a ton of rye-grass, and what is the value of a ton of manure; and he will then be able to say how many tons of manure he can apply with a prospect of profit.

It seems especially calculated for deep heavy lands near the farm-yard. A capacious liquid-manure tank, with a liquid-manure cart so contrived as to take out the liquid-manure and bring back a load of cut-grass, would greatly increase its value, and in the absence of these guano will be found no bad substitute.

I am, Sir, yours very faithfully,

T. W. Buller.

15, *Sussex Gardens, London, Sept.* 2, 1846.

These practical deductions inform us, my Lord, that this valuable plant may be grown upon almost every kind of soil by judicious treatment with unbounded success; and it may be interesting to know the loss of weight by drying it. A yard of grass was cut for Captain Buller, September 19, being the fourth or fifth crop of that year, and after seed had been taken, it weighed as grass 5¾ lbs. (12 tons 8 cwt. to the acre); dried twelve days in the air it became reduced to 2¾ lbs. (5 tons 18 cwt.); hung up three days in a kitchen, with 65 to 75 degrees of heat, it became 2 lbs. 10 ozs.; then roasted in a sack before the fire till it would rub to powder in the hand, it weighed 2 lbs. 6½ oz. (5 tons 3 cwt. the acre).

No. 1. The hot limestone entirely failed.

No. 2 produced, without manure, solid or liquid, up to the first week in August, 5 feet 6 inches of grass.

No 3, sand upon sand, produced without liquid but little at Woburn, while in Warwickshire (Nos. 4 and 5) it produced seven crops by September 14, and in Devon (No. 5) a net profit of 7*l.* 9s. 8d. per acre, with the enormous outlay of 13 cwt. of guano to the acre.

Nos. 6 and 7. Two growers have sown the plant in sand upon stonebrash without success; pains seem to have been taken in these cases; it must be said to have failed in both, and this is the only soil in which it has not generally succeeded.

Nos. 8 to 13. Sand upon gravel. All remunerating crops except No. 8. The whole of these soils were unlikely to produce good crops in so hot a summer, and perhaps many of them would have grown very little grass of any other kind.

Nos. 14 to 18. Light soils, various subsoils: none less than three, and most of them four crops in six months.

No. 19. Clay upon gravel; no drainage, very wet, no manure, no urine, very little produce.

Nos. 20 to 30. Loam upon clay. Three, four, five, six crops have been obtained from these soils;

the better drained have been most successful. The produce from No. 30 is well worth close attention; for while 7*l.* 9s. 8d. net profit per acre has been obtained from No. 5, with 13 cwt. of guano to the acre, a much larger quantity has been produced in Yorkshire by a small quantity of guano reduced to liquid; 18 tons of hay, or 66 tons of grass, per acre, being the amount of produce.

Nos. 31 and 32 are London clays, without drainage, with bad crops. Upon this soil, moderately underdrained, my experiments were commenced and have been carried on. I have never failed to produce every year, from a portion of grass not kept for seed, from seven to ten crops. I have known five produced in one summer without a single atom or drop of manure. I have found the plant sickly and weak where my subsoil was wet, healthy and vigorous where it was dry. I have been convinced for some time it luxuriates in a dry subsoil rather than not retentive, that it will grow rapidly in the strongest clays if not poisoned with stagnant water, that it grows fast in any light soil well irrigated with liquid manure. I have grown it in sand from the sea shore, moistened with liquid manure. The dressings I should place in the following order:—Urine decomposed in a close tank, one-third urine, water or dung-water two-thirds, guano dissolved 2 cwt. or 3 cwt. in 3300 gallons of water for an acre, during the months of March and April; if the surface of the land be wet the guano may be used solid, as the cart injures the plant in wet weather, and then I should advocate a larger quantity. In June, July, and August, I think nitrate of soda, 2 cwt. dissolved in 3300 gallons of water to the acre, or powdered only, will be found an excellent dressing.

As the sun loses its power I would again adopt the warmer manure—urine or guano. I do not place guano as an equivalent to urine; I place it as a substitute when urine has not been saved in sufficient quantity. It may be had in large quantities upon every farm: by taking as a preliminary step the construction of tanks, and draining the stables, cattle-sheds, piggeries, men's urinals, privies and water-closets of dwellings into them, before the land is ploughed to sow the seed, a larger quantity is collected than is usually calculated. I think no man has, in the first instance, made tanks enough to contain the urine made on his farm during the winter months to be applied during the summer.

Knowing something of the value of urine, and the profit to be derived from it, I am the more anxious to induce others to try it, and will therefore take this opportunity of saying something about the mode I have adopted to collect it and the expense of the tanks to retain it, which may be useful to those who have not yet set about so important an operation in agricultural pursuits.

My land is clay, 250 feet deep; in this soil only have I had experience, so for this only do I prescribe. Having well considered where the liquid is to be used as well as where it is made, and resolved upon the most convenient situation, I have a hole dug full 7 feet in diameter and 12 feet deep, the bottom being shaped like a basin and well rammed with a little water into good puddle. The construction of the tank is commenced by the bricklayer forming a circle with bricks (4-inch work) round an opening of 5 feet, leaving a space behind the brick-work to be filled and rammed well in with clay-puddle by the labourers as the building is worked up, no mortar being used with the bricks or anything else till the dome is to be formed; mortar or cement is then required, the roof is arched in, a man-hole left in the centre of each tank, and covered with a 3-inch yellow deal cover (2-inch oak would be better). One of these tanks, contaning 1000 gallons, costs 2*l.* 17s. 6d. in the following items, calculating to farmers who have the horses and carts in possesion:—

	£	*s.*	*d.*	
Two farm-labourers, each ½ day : :	0	2	0	*
Two labouring lads, each 1 day : :	0	3	0	*
One man, 1 day : : : : : : :	0	2	0	*
Two others, 1 day : : : : : :	0	5	0	*
One bricklayer, 1 day : : : : :	0	4	6	
One ditto labourer, 1 day : : : :	0	2	6	
Three horses and carts drawing away ¼ mile, for want of nearer shoot, ½ day : : : : : : : : :	0	4	6	
8 feet of 3-inch deal for cover, at 5½d. per foot : : : : : : : : :	0	3	8	
Labour and nails : : : : : : :	0	0	10	
Lime and sand for man-hole : : :	0	2	6	
900 place bricks : : : : : : :	1	7	0	
	£2	17	6	

Several of these tanks should be made adjoining each other; they then form a most excellent filter to keep back any hay or straw that would prevent the egress of the liquid from the water-cart, receiving it into the first from the stables, and pumping it out of any other one of them. It must be observed, also, the tanks being formed, the drainage into them is the next feature to be considered. I have adopted a mode economical and effectual by laying down in the pavement what is called at the iron-works an angle-iron gutter of very small size, and covering the surface of it with a flat iron bar, just to lay within the surface of the gutter, wherein all the urine is received and conveyed away immediately, and all the straw, dung, and dirt is kept out; this is highly advantageous, as the urine is conveyed away immediately, without escape of ammonia,

* Occupied in digging the hole, carting away clay, preparing puddle, and ramming.

and the little gutter may be uncovered as often as you please, and swept out with a broom. There is no under-drain to get stopped; all can be seen and kept in order by a commonly useful person without the aid of what is called a tradesman. I should like to see three of these little gutters down a stall, whereby all the urine would be caught; 3 gallons per day from each moderately sized horse, more from cart-horses that drink freely, considerably more from cows, and a much larger quantity from pigs than is usually calculated. If all the water is caught from farm-horses, cows, pigs, farm-servants, household-servants, the tanks would be filled very quickly; and whenever the tank containing 1000 gallons of urine is filled the second time and properly applied to Italian rye-grass, the result will show it is not too high an estimate to calculate the tanks and drains paid for. The first application will convince the grower of 10 acres of this grass that his present stock is insufficient to eat it. He must add to it, and thereby increase the quantity of urine considerably, and so go on to keep a much larger farming stock altogether. The often-asked question, "How shall I obtain urine enough?" will cease to be asked, and the amount of solid fæces so much increased as to obviate the necessity for a constant outlay of capital to procure it.

I have the honour to subscribe myself,

My Lord,

Your Lordship's very humble Servant,

Wm. Dickinson.

7, Curzon-street, May Fair, London.

—Journal of Agriculture.

REPORT ON LORD BLANTYRE'S IMPROVEMENTS ON THE COTTAGES AT ABBEY MAINS, LENNOXLOVE ESTATE, IN 1844 AND 1845.

BY MR. WILLIAM GOODLET, FACTOR.

The number of cottages improved on this farm originally consisted of eight, but were reduced by the improvements to six—new ones being erected to supply the deficiency. Each cottage consisted of only one apartment, 20 feet by 15, divided by the cotters' beds into a kitchen and pantry. The floors were of clay, the walls unplastered; and the rafters, laid over with coarse boarding, supplied the place of ceiling. On the opposite side of the road, in front of the cottages, stood a row of ruinous pigsties and dunghills; behind were the gardens.

From the ground having a considerable acclivity behind the cottages, their enlargement could only be conveniently accomplished either by heightening the walls and adding garrett-rooms, or by a new subdivision of the range, reducing their number in order to obtain the dimensions required. The former plan would have occasioned the removal of the roofs, which could not have been replaced without considerable expense; and it was doubtful whether the old walls would have borne the additional weight thus to be thrown upon them. The latter plan was therefore adopted. In subdividing the range it was considered advisable, though at a little increase of expense in the mason-work, to have a passage between every two cottages, to give ready access to the offices to be erected behind, and to the gardens.

Behind the cottages, but separated from them by a roadway 10 feet wide, the out-houses were erected. They are subdivided in the same way as the cottages, and so arranged as that each double-set occupies the same space in length as the double cot-house to which it belongs; thus:—

In front of the cottages flower-plots have been formed and inclosed from the road by rustic paling; and the old piggeries have been removed from the opposite side of the road, and the ground dressed up and inclosed with the adjoining field.

In the new offices, each dwelling is allowed a privy, coal-house, pigsty, and ash-pit.

Besides the alteration consequent on the enlargement of the cottages, each dwelling is subdivided by brick partitions into a kitchen, room, and pantry, the old windows are replaced by the Society's premium cast-iron ones for cottages; the room is laid with wooden flooring, and the other floors with Caithness pavement; the ceilings are lathed and plastered, and the walls plastered. A fixed bed is put up in the room, shelving in the pantry, and grates and sweys in the kitchen.

The mason-work was done by contract, and the wright-work by his lordship's carpenter. Foreign wood was used for the doors and finishings; home wood, from his lordship's plantations, for the rest. The additional stones required were taken from a quarry on the farm, and the carriages were driven by the tenant.

The following is a detailed statement of the cost, 1st, of improving the cottages; 2nd, of erecting the offices:—

1ST.—IMPROVING THE COTTAGES.

Mason-work.—Taking down and rebuilding gables and walls, slapping doors and windows, &c., &c.	£35	12	9		
Vents building, 142 feet, at 5d. per foot	2	19	2		
Hewn work, corners, chimney-heads, doors, windows, and jambs, 1,200 feet, at 4d., and squews, 259 feet, at 3½d. per foot	23	15	6		
Partitions of brick, 157 yards, at 2s.	15	14	0		
Caithness pavement, 1,790 feet, at 4¼d.	31	14	0		
Dwarf walls, 14 yards, at 1s. 3d.	0	17	6		
Hearth-stones, 105 feet at 8d.	3	10	0		
Quarrying stones	9	11	8		
				£123	14 7
Carpenters'-work.—Home wood used for ceilings, joists, flooring, and lath, £36; foreign wood for doors and finishings, £9 17s. 4d.	£45	17	4		
Carpenters' wages	28	15	5		
Nails, ironmongery, and smith-work	9	3	5		
Cast-iron window frames, 12, at 5s. 6d.	3	6	0		
Glazing, 79 feet, at 1s. 1d.	4	5	7		
Paint for outside windows, &c.	0	12	4		
				£92	0 1
Plaster-work.—912 yards, two coats, at 3¼d., and 66 yards, one coat, at 1½d., and sundries				12	17 9
Slater-work.—Repairing roof, tiles, and cement				5	0 1
				£233	12 6

Averaging £38 18s. 9d. per cottage.

2ND.—ERECTING THE OFFICES.

Mason-work per contract	£53 9 6
Home wood used in offices	5 7 4
Carpenters' wages	5 11 3
Ironmongery, nails, &c.	2 9 5
Plaster-work, for workmanship only	1 5 0
Slater-work, including roofing tiles, lime, &c., for plaster	8 4 10
Drain tiles, for draining behind offices	1 10 9
Quarrying stones	6 13 11
	£84 12 0

Averaging £14 2s., offices for each cottage.

REPORT BY A COMMITTEE OF THE HIGHLAND AND AGRICULTURAL SOCIETY ON LORD BLANTYRE'S IMPROVED COTTAGES AT ABBEYMAINS.

The convener having had transmitted to him a plan of the cottages, and report thereon, with a view to competition, appointed a meeting of committee this day for inspection; and the committee having visited the cottages, and carefully inspected the same, have now to report as follows:—

1. That the situation of the cottages (six in number) as respects amenity of climate and aspect, is every way desirable, being on rising ground, and having a fine southern exposure. The arrangement of the buildings, too, is well calculated to secure ventilation and cleanliness; and the drainage seemed complete. The cottages and out-houses, including garden, may occupy about an acre of ground.

2. The cottages are built of the ordinary materials used in the district, and are very well adapted to the climate.

3. The interior accommodation of the cottages is remarkably good and commodious, and the arrangement of the offices is highly satisfactory, especially as regards the privies and ash-pit; and although it appears that the privies have been about two years in use, they look as clean as if only erected yesterday, and reflect great credit on the cleanliness of the cottagers. The committee remarked that *doors* had been dispensed with in the court-yard of the pigsties, which appears in practice to answer well, and to be an improvement worthy of adoption in such erections.

4. The work appeared extremely well done, and the buildings free from damp, and perfectly dry. Considering the work done, the committee think the expense very moderate; at the same time, the improvement of each cottage, including the erection of out-houses in connection with it, amounts to £53.

5. The outward appearance of the cottages is good, without any unnecessary expense incurred on ornament.

Upon the whole, the committee have much pleasure in recommending the judicious improvements effected on the cottages to the notice of the society. With the commodious and neat arrangement of the whole buildings the committee were highly gratified, and think them well deserving of a premium.

Inspected and reported upon by us, this 23rd day of October, 1846.

G. GRANT SUTTIE.
A. HOUSTOUN.
J. HAY.

—Journal of Agriculture.

ON THE STORING OF TURNIPS IN SCOTLAND.

Various methods of preserving such roots have been practised in Scotland. Formerly, in some counties, the turnip used to be taken up from time to time as needed, and as the weather was considered favourable, and carted into roomy sheds or houses, which when emptied were replenished. Some farmers would cart the turnips, say in November, and put them into large pits, like potato-pits; sometimes covered over with turf, soil, and straw; sometimes with only one of these. But turnips so preserved often become injured by heating; proceeding sometimes from their own sap, but more frequently from external moisture getting in among them. Latterly farmers have greatly improved their practices of storing roots; but the result will much depend both on climate and means of preservation. In many counties the Swede turnip taken up in November and December, and put into long narrow heaps, carefully thatched over with drawn straw, and turfed on the ridge or crown of the pit, and having a water-furrow on both sides to keep the ground and turnips dry, will keep sound and good into April following. Sometimes the turnip is stored up against a three, four, or five feet dyke or wall, and thatched over so as to turn all rain off the heap; which has also answered well. But I know no better method than to use two rows of sheep-bars or flakes set parallel about five feet wide, and to build the Swede turnip up as you go along, so as to form an arch of turnips in the centre of the flakes, which must be driven firmly into the ground. Let such then be thatched over, and roped down, so as to turn the rain, having a good easing or overlapping of straw, to throw the water clean over the flakes and turnips, and they will keep well till May or June. If very severe weather should set in, it is easy to entwine some straw or thatch along the bars or flakes, so as to protect the turnip from frost; and in mild weather it can be easily taken away to allow of ventilation. The great advantage of this system is that the turnip is kept dry, and so cool and well ventilated that internal heat is not generated, and the roots are thereby kept in the most nutritious state. When fully ripe, say the middle of November or December, swedes may be stored and kept till June in good order; getting one turn over in spring to check the natural growth of that season. Turnip so stored is of course topped and tailed before being carted off the field.

REVIEW.

THE MANSE GARDEN.

By Nathaniel Paterson, D.D.

William Collins, Glasgow and London.

At this time, when the beauties of the garden are hastening into bloom, and the young fruits are giving promise of their future success, a perusal of this work, which is written in a quaint and pleasing style, will add much to the information of the amateur regarding the pleasant culture of fruit-trees, flowers, and vegetables. It is full of good, useful, and practical information; the directions given are ample and precise; and from the tone which pervades the whole, it is evident that the author is a practical man. We extract the following, which will give an idea of the author's style; wherever a moral can be deduced, he does not let slip the opportunity:

"With regard to the recovery of other misguided trees, the cherry, if not very old, may be cut over with a circular sweep, about two feet from the ground; and the consequent shoots set all off in the manner of spoke wheels, even bending some of them downwards, so as to hide the deformity of the naked stumps, and making them fast by tying, not by nails driven into the old wood, as in the case of the apple or pear. The peach in its age and disorder had better be replaced by a young tree. But with regard to apricots and plums, in the like circumstances, a very gratifying arrangement may be adopted—one by which the tree will no longer be ill-looking, but soon clothed with abundant blossom and fruit. This affords a pleasure of that kind which we have in the reformation of a prodigal; and in which case, as in the former, some of the complacency is perhaps due to the patience and methods we have employed, contrary to the opinion of others, who judged the recovery hopeless.

"Choose some fine winter day, and begin your operations by wrenching the ragged, hedge-like tree entirely from the wall. Cut out a number of its oldest and barest boughs, with a view to acquire a plentiful supply of young wood near the heart of the tree; prune all the remaining branches quite smooth, about half way to the top, and then restore them to the wall by an equal distribution in the form of a fan; but let the bared portion of each branch be held out from the wall about four inches by pieces of wood set behind. Near the extremity of these branches will be found, by the favour of former negligence, an abundance of young shoots, some of one and some of two years' growth. Let all these be laid down in close order, like a circle of rays, which in summer they will still more resemble by the brightness of their blossom. Within this luminous ring you will have another circle, yet in embryo, composed of the young shoots proceeding from the old stem, and for whose expansion you have provided by keeping the naked part of the old branches at a proper distance from the wall. This inner circle will also abound in fruit as close and beautiful as the stars of a peacock's feathers, and will quickly enlarge its dimensions, approaching nearer to the exterior ring. When the younger rival comes quite up to the older, then, agreeably to the laws of nature, the beauty of the mother must fade as that of the daughter is unfolded. On the first conjunction your tree is complete, and all in full bearing; and this completeness will be maintained by gradually diminishing the outer ring as the interior disk is enlarged. For the success of this shift also, I can refer to the test of experiment, and may be allowed again to notice the advantage of a principle by which, without losing one year's crop, an old and almost barren tree is submitted to a process of entire renovation, having not only young wood in every part, but studded all over with golden apricots and green-gage plums."

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Weekly Council was held at the Society's house in Hanover-square, on Wednesday, the 31st of May. Present—Colonel Challoner, in the Chair; Lord Camoys; Sir Robert Price, Bart., M.P.; Sir Francis Lawley, Bart.; Mr. Burke, Mr. Evelyn Denison, M.P., Mr. Dunne, Mr. G. Dyer, Mr. Fuller, M.P.; Mr. Baskerville Glegg, Mr. Grant (Glamorganshire), Mr. Hillyard, Mr. Fisher Hobbs, Mr. Kinder, Mr. Morant, Mr. Parkins, Prof. Sewell, Prof. Simonds, Rev. T. P. Slapp, Rev. J. R. Smythies, Mr. Hampden Turner, Mr. T. R. Tweed, Prof. Way, Mr. Bullock Webster, Mr. Whitmore, and Mr. G. Wilbraham.

Vegetable Charcoal.—Mr. Wolryche Whitmore favoured the Council with the inspection of samples of the various artificial manures he had formed of bone and charred vegetable refuse, obtained by the process described by him at the previous meeting, as well as of specimens of the bone and charcoal when incorporated, and also in their separate state, previously to admixture. The bones, as used by Mr. Whitmore, were boiled for two or three hours in water, for the purpose of removing the greasy matter they contained, but without extracting the gelatine more intimately combined with their phosphate of lime, or earthy material; and he had every reason to believe that by thus leaving in the bones their animal matter, the value of the manure resulting from their decomposition was proportionably more valuable. The water in which these bones had been boiled was reserved as the liquor for moistening the conical heaps of mixed bone and charcoal, and promoting their fermentation, and the decomposition of the bone, so that, although the oily matter had thus, in the first place, been withdrawn by boiling from the bones in order to render them more easily decomposable, by this economy in the use of the water employed in the process, a large part of the animal matter extracted by boiling was restored, and he believed the liquor so obtained would be found superior to common water, or the liquid from the manure tank. The bones were reduced, by means of a mill, into splintered fragments, varying in length from an eighth to half-an-inch. By converting also the whole of the refuse vegetable matter on his garden and farm into charcoal, or reducing it at least into a charred state, and employing it as a valuable manure, such refuse was removed from the land and turned to good account; with this further advantage, that the seeds of all weeds collected for the purpose were completely destroyed by the combustion to which they were subjected; while in the case of manure heaps, in which, according to the old plan, such weeds were mixed, the vitality of their seeds remained uninjured, and the weeds themselves consequently proved as abundant as ever on the land to which such manure was applied. Mr. Whitmore had for many years experienced the value of charred refuse for garden use; but had only recently directed his attention to its more extensive application on his farm. He conceived that its adoption would lead to an improved system of culture on inferior soils; for he had found that earth on which nothing would grow had only to be dressed, in furrows, with virgin soil and the charred refuse, when the finest crops would be produced, quite irrespective of the sterile soil below the surface, an artificial bed for the seed being thus formed upon it. He had no doubt that the greatest advantages would eventually be derived by mixing equal quantities of the charred refuse with virgin soil, and thus forming artificial seed-beds; which would not be liable to the inconvenience arising to the growing plants from the caking which so often ensues on a change of weather from wet to dry. As he had remarked on the previous occasion, vegetable refuse of every description was available for the purpose of the charring required, whether consisting of hedge-cuttings or other woody material, or of stubble, couch-grass, or other weeds; and the heaps being formed in a conical shape, covered with earth or weeds, had only to be lighted, and care taken, during the slow combustion, that no flame, and as little smoke as possible, issued from the heaps. He had found that ten days or a fortnight were sometimes required in large heaps to effect this object; but the longer the process was in operation the better was the result obtained. This charred substance, even with undissolved bones, had produced large crops; and he had ascertained that by mixing it with an equal quantity of wood-charcoal, it would effect the fermentation and entire disintegration of bones, on Mr. Pusey's plan, but not quite with the same facility as wood-charcoal only: while with sand or soil, with which others, as he had understood, had succeeded, he had entirely failed. The proportion in which the bone and charcoal were used was one part bone to two parts charcoal in a pulverised state, the bone being, as before stated, wetted with either water, liquid manure, or liquor in which the bone had been boiled; then mixed with the charcoal, and placed under a shed. A strong fermentation soon took place, and in about a month the bone was dissolved, and incorporated with the charcoal.—Col. Challoner stated that, having on his estate several thousand loads of Fern, he would make trial of the experiment of charring it, and would report to the Council on a future occasion the result attending the application of such charred Fern as a manure. He had for the last 15 years been in the habit of manuring from 50 to 60 acres of Turnip-land with charred peat or bog-soil, and soap-ashes, at the rate of 40 bushels of such mixture per acre, and had derived most excellent crops, although of course not equalling such as would have been obtained from farm-yard manure.—Mr. Fisher Hobbs did not think blazed or burnt ashes, or ashes of commerce, equal in their effects to charcoal or charred substances. He had been much struck with the great distinction which Mr. Miles had some time ago pointed out between the action of burnt clay and clay that had been only charred; and

he had, in consequence of the result of Mr. Miles's experiment, been led for the last two years to submit the waste pollard timber on his farm, as well as roots, turf, bog-earth, &c., to the action of fire, for the purpose of reducing them into the condition of manuring substances. At first he entirely burnt the refuse in question, and obtained from a stack 14 feet long, 3 feet high, and 3 feet wide, formed of logs of wood, only 3 bushels of ashes, when entire combustion was allowed to take place, and that not equal in quality to charcoal; but from 28 to 30 bushels of charred manure when the process was that merely of a slow and stifled combustion. The charcoal burner first selected a bank of earth in a finely pulverized state, in order that the heaps of burning refuse might be further covered with soil, in case any increase of tendency towards flame evinced itself; but as this was found to be a waste of good earth containing vegetable mould, Mr. Hobbs directed that sand should be used instead of such fine earth, and it was found to answer the purpose equally well. Water was occasionally added to prevent the heaps bursting out into flame, and was obtained either as occurring near the place, or conveyed thither in a water-cart. The result of this combustion, if properly carried on, ought, he considered, to be charcoal of a dark, carbonaceous colour, and not mineral ashes of a red colour. The charred matter, when ready, was placed on an old barn floor, and its substance reduced to a form of sufficient fineness by means of an iron roller passed over it. The cost of obtaining it, including the labour of splitting the logs into small pieces, was about seven farthings per bushel. He was in the habit of making many hundred loads of it during the season, and of applying it to his Carrots and other root crops on a sharp gravelly soil, instead of other manure. So convinced was he of its great value for the Carrot crop on high barren sands, and other sterile soils, his Carrots growing in rows under such circumstances with a vigour nearly equal to crops planted in the valley beneath, that he thought the plan would prove a great step in the cultivation of all root crops.—Prof. Way remarked that the smothering up of the heap of stifled burning vegetable matter, with the intention of preventing its bursting out into flame, was gained, not so much by such precaution keeping the smoke or flame in, as it was supposed, but by keeping the air out, and thus cutting off one of the essential elements required to support combustion. With regard to Mr. Whitmore's experience of the successful employment of charcoal in promoting the fermentation and disintergation of bones for manure, he confessed that such result was opposed to preconceived notions entertained by scientific men on the subject; and he should have imagined, on a review of the considerations affecting the question, that charcoal would have had quite the opposite effect, and would have retarded such decomposition. However, such being the fact, some good cause no doubt existed for its occurrence; and it appeared to him that such cause might probably arise in this case as in that of burning limestones into lime, in which the action ceases unless the carbonic acid gas disengaged by the heat applied be carried away from the surface of the incandescent limestone. He stated that when marble or chalk (each being carbonates of lime) was placed at the bottom of a heated crucible, that a certain portion of the carbonic acid was forced off from the lime by the heat, but was not carried away, hovering as a dense vapour above the heated mass, and preventing further decomposition. He could only conceive that charcoal aided the decomposition of bones by carrying off, by absorption, the gaseous matter as continuously produced during the process, which was thus left unfettered by the presence of any gaseous body that might otherwise have retarded its progress. He feared that the distinction between charring and burning bodies was not sufficiently attended to by the labourers employed on a farm. It was, however, an essential distinction, and made all the difference in the result. The incidental advantage gained by Mr. Whitmore was also worthy of particular notice, namely, that by burning up all the weeds on his grounds he entirely destroyed their vitality, and prevented their recurrence in subsequent seasons. Mr. Tweed made some observations on the facilities under which the charring process might be conducted in reference to the proximity of water and soil suitable for regulating the process of combustion.—On the motion of Mr. Glegg, seconded by Mr. Parkins, the Council then voted to Mr. Whitmore their best thanks for the kind manner in which he had taken the trouble of bringing this important subject before the notice of the members.

Cottage Floors—Mr. Fuller, M.P., submitted to the notice of the Council a specimen of the oaken "bricks" he was enabled, by means of his water-power saw-mill in Sussex, to make at the low rate of 1s. 6d. per 100, out of refuse timber, for the purpose of constructing clean, dry, warm, and comfortable flooring for the cottages and school-rooms on his estate, instead of the ordinary clay-burnt bricks, stone flags, or other material commonly employed for that purpose.—Professor Sewell had no doubt that if wooden blocks or bricks similar to the one then exhibited by Mr. Fuller, but rendered convex instead of being left flat on the upper surface, could be furnished at a moderate price, and were driven close together on a hard level surface beneath, in stables or cattle sheds, they would furnish a decided improvement in the construction of farm buildings; as the rough uneven pebbles, flints, or boulders in common use sink into hollows, and form receptacles which retain the drainings of the stables or yards, and lead both to uncomfortable bedding for the animals, and occasion decomposition of the straw and manure, and the evolution of ammoniacal gas, to the injury of their eyes and lungs. That injury induced inflammation and cataract of the eye, terminating in blindness on the one hand, and on the other, by the stimulating properties of the gas on the air-passages from the nostrils, larynx, trachea, and bronchial tubes into the air-cells of the lungs, being productive of a sensitive irritation on the delicate lining mucous membrane, as well as of susceptibility to become more easily affected by changes of temperature: the result being coughs, catarrhs, sore throats, inflamma-

tion of the lungs, and other diseases of the chest, either of an acute or chronic character. When of a chronic nature these affections assume the character of short breath (or thick wind), irregular breathing (or broken wind), and that morbid condition of the lungs in which they become studded with tubercles, from which almost all outbreaks of glanders originate. He had remarked, when on the Continent, that wooden plank floors were very common throughout Germany; but the best specimens he had seen (and after his return to England he recommended for adoption in 1818, in a Report to the Governors of the Royal Veterinary College) was that in Prince Charles's stables at Vienna. Prof. Sewell had seen experiments tried during the period of the last 30 years, with various materials for flooring stables in public and private establishments, for both light and heavy horses, namely, with clinkers, brick, stone, cast-iron blocks, chalk, cement, asphalte, and other modern compositions; but, for wear and durability, he had never seen anything surpass the *real* Dutch clinker.

Mr. Wyatt Edgell addressed to the Council a further communication on the period of suckling; Mr. Bates on exhibiting simultaneously several generations of stock; Mr. Fulbrooke on meteorological indications; and Messrs. Spence and Co., on manure to be exhibited by them at York. The Council then adjourned.

A Monthly Council was held at the Society's House in Hanover-square, on Tuesday, the 6th June. The following Members of Council and Governors were present: The Earl of Yarborough, President, in the chair; Earl of Chichester; Hon. Captain Dudley Pelham, R.N.; Sir Francis Lawley, Bart.; Sir Matthew White Ridley, Bart.; Sir Charles Lemon, Bart., M.P.; Sir John V. B. Johnstone, Bart., M.P.; Colonel Austen; Mr. Raymond Barker; Mr. Barnett; Mr. Bennett; Mr. Bramston, M.P.; Mr. Brandreth; Mr. Druce; Mr. Brandreth Gibbs; Mr. Harvey; Mr. Hillyard; Mr. Fisher Hobbs; Mr. Jonas; Mr. Kinder; Mr. Miles, M.P.; Mr. Pusey, M.P.; Professor Sewell; Mr. Shaw, London; Mr. George Turner; Mr. Thomas Turner; and Professor Way.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, presented the Report of the Society's accounts to the end of the previous month, from which it appeared that on the 31st of May the invested capital of the Society stood at £9,889 stock, with a current cash balance in the hands of the bankers of £1,566. The Chairman explained that this general balance was made up of the following special accounts:—York subscription (balance), £950; arrears of subscription received, £103; and life compositions, £471; leaving an available balance for current purposes of £42.

Prize Essay.—Mr. Pusey, M.P., Chairman of the Journal Committee, reported to the Council the Essay on the Management of Cattle, to which the Judges had awarded the prize of £30 offered by the Society; and the sealed motto-paper being opened by the President, the author of the successful essay in question was ascertained to be Mr. Hall W. Keary, of Holkham, Steward to the Earl of Leicester.

Subjects for Essays.—Mr. Pusey then called the attention of the Council to the subjects of the prizes to be offered for Essays to be sent in for competition next year; when the various topics suggested in the course of his address led to an incidental but very interesting discussion and communication of facts on the practical subjects to which he adverted. The following schedule of the subjects and respective amount of the prizes for Essays to be sent in to the Secretary on or before the 1st of March, 1849, was then unanimously agreed to, namely:

Farming of Lancashire	£50
Ditto of Sussex	50
Ditto of South Wales	50
Labourers' Cottages (essay and model)	50
Ditto ditto (second best essay)	20
Breeding and Management of Pigs	20
Increasing the Supply of Meat	50
Management of Barley	15
Agricultural Buildings	50
Breeds of Sheep for Different Localities	20
Top-dressing Soil with Marl, Clay, &c.	15
	£390

The Council also agreed to offer £50 for the best Essay on the destruction of the Wireworm, to be sent in to the Secretary on or before the 1st of March, 1850. Mr. Pusey explained that the full enunciation of the terms of these prizes, and the special conditions under which they were to be competed for, would be published at length in the ensuing part of the Journal of the Society.

Distributors of Journal.—On the motion of Mr. Pusey, the Council unanimously resolved that, previously to issuing the forthcoming number of the Journal, under the new regulation, by post to each member of the Society, a letter of thanks should be specially addressed by the Secretary of the Society to each of the honorary distributors, who had so kindly been the efficient means of placing the Journal in the hands of members residing in their respective localities, and who had thus rendered essential service in promoting the objects of the Society.

York Meeting.—Sir John Johnstone, Bart., M.P., reported, on the part of the General York Committee, the progress of the arrangements for the Society's ensuing Country Meeting in that city, the preparation of the programme for the occasion, and the required enlargement of the Show-yards for the reception and exhibition of the large amount of both Live Stock and Agricultural Implements entered for the Show, as shown by the following comparative schedule of entries from the commencement of the Society.

Year of Meeting.	Place.	Entries of Stock.	Entries of Implements.
1839	Oxford	249	23
1840	Cambridge	352	36
1841	Liverpool	319	312
1842	Bristol	510	455
1843	Derby	730	508
1844	Southampton	575	948
1845	Shrewsbury	437	942
1846	Newcastle	613	735
1847	Northampton	459	1321
1848	York	724	1508

Trial of Implements.—Colonel Challoner, Chairman of the Trial of Implement Committee, transmitted to the Council the following report:—

REPORT.

The Trial of Implement Committee have had under their consideration the questions referred to them by the Council, on the subject of a suitable method for the more accurate trial of the steam engines and other machinery at the Society's country meetings, and on the best means of replacing the valuable services of Mr. Parkes in reference to the duties attached to the office of Consulting Engineer; and they beg accordingly to report to the Council the following recommendations as the result of their consideration of the subjects referred to them.

I. That Mr. Parkes's offer be accepted, to undertake to give the proper orders for the construction at Messrs. Watkins and Hill's, of a suitable Steam-power Indicator for the use of the Society.

II. That Messrs. Easton and Amos's offer be accepted to undertake the construction of a proper Force Resister, or Prony's Break, agreeably with the plan furnished by them to the committee.

III. That Messrs. Easton and Amos be requested to accept the appointment of Consulting Engineer to the Society, vacant by the resignation of Mr. Parkes, C.E., in order that either Mr. Easton or Mr. Amos may attend the York meeting for the purpose of acting as Mechanical Referee to the Judges on that occasion.

IV. That Mr. Thompson (one of the Stewards of Implements for the York meeting), be requested by the Council to undertake the drawing up of the Report of the Exhibition and trial of Implements on that occasion for subsequent publication in the Society's Journal.

V. That Mr. Shaw, of Northampton, be requested to act as additional Steward of Implements at the York meeting, in order that Mr. Thompson may be relieved of a portion of the duties as one of the Stewards of Implements, for the purpose of enabling him to devote the requisite amount of attention to details for the Report.

(Signed) C. B. Challoner, Chairman.

This report was adopted and confirmed by the Council.

Messrs. Easton and Amos, the newly appointed Consulting-Engineers to the Society, reside at the Grove, Southwark, London; and are well known by their extensive works, undertaken by order of the Government as well as of public companies and private individuals, in connexion with the construction of Steam-Engines, Corn-Mills, Paper-Mills, Oil-Mills, and machinery of almost every kind, including that required for raising the tubular bridge over the Conway. They have also long been practically familiar with the manufacture of Agricultural Implements, and with operations connected with extensive drainings of land below the level of the sea.

Norwich Meeting.—Mr. Hudson, of Castleacre, reported to the Council the result of his inspection, as requested by the Council, of the lands in the neighbourhood of Norwich placed at the disposal of the Society by the authorities of that city for the trial of the light and heavy land implements on the occasion of the country meeting of next year. Mr. Hudson having been favoured by Mr. Staff, the Town-clerk of Norwich, with every facility for making his inspection, found land within a distance of two miles from that city quite heavy enough to try any implements; and upon the same farm, and within half a mile from such heavy land, he found land sufficiently mild to try implements adapted for light land culture. The Council expressed their thanks for the pains Mr. Hudson had kindly taken on this subject, and confirmed the report he had thus transmitted to them.

On the motion of Mr. Brandreth, the Council took into consideration the appointment of a General Norwich Committee, when the following list was agreed too:—The Earl of Yarborough (Chairman), Earl of Leicester (Vice-Chairman), Duke of Richmond, Earl of Stradbroke, Lord Hastings, Lord Henniker, Lord Portman, Sir John Johnstone, Bt., M.P., Sir John Boileau, Bt., Mr. Raymond Barker, Mr. Bennett, Mr. Brandreth, Mr. Burroughes, Col. Challoner, Mr. Druce, Mr. B. Gibbs, Mr. Hamond, Mr. Harvey, Mr. F. Hobbs, Mr. Hudson (Castleacre), Mr. Kinder, Mr. Miles, M.P., Mr. Shaw (London), Mr. Shaw (Northampton), Mr. Shelley, Mr. Thompson, Mr. Wilson (Stowlangtoft Hall), and Mr. Wodehouse, M.P., with the addition of the present Mayor of Norwich and the Mayor of next year, should they be Members of the Society, and eligible accordingly for acting on the Committee.

The Council, on the motion of Mr. Miles, M.P., then agreed to a preliminary Prize-sheet of Prizes for Implements at the Norwich Meeting, to be taken into final consideration of the Monthly Council on the first of August next, and immediately after that date to be published for the information of exhibitors.

Notices of Motion.—Mr. Pusey to move, on the first Tuesday in July next, a renewal of the grant for another year for Analyses of Ashes of Plants. Mr. Shaw to move on the first Tuesday in December next, such an alteration of the Bye-laws as will enable the question concerning the decision as to the place of the Country Meeting at the Monthly Council in May in each year, to take the place of all previous business, excepting the reading of minutes, election of members, proposal of candidates, and reception of the Report of the Finance Committee; in order that the deputations who attend that Council may be detained as short a time as the business of the Council will allow.

At the suggestion of Mr. Fisher Hobbs, the House-Committee were requested to report to the next Monthly Council the arrangements to be made for improving the condition of the rooms in the basement floor of the Society's house, and also for providing further accommodation for Deputations who may in future attend the Council.

The Council then adjourned.

A Weekly Council was held at the Society's House, in Hanover-square, on Tuesday, the 13th of June; present, Mr. Raymond Barker, in the Chair; Rev. G. C. Cotes; Mr. Dyer; Mr. Eggar; Mr. Brandreth Gibbs; Mr. H. M. Hawkins; Mr. Fisher

Hobbs; Mr. J. Holder; Mr. Hudson, Castleacre; Mr. Edward Jones; Mr. Kinder; Mr. Laycock; Col. Mac Douall; Mr. Maddison; Mr. Parkins; Prof. Sewell; Mr. T. Turner; Mr. T. R. Tweed; and Prof. Way.

The following communications were received:

1. Letter from Mr. Thompson, expressing the pleasure it would give to accede to the wishes of the Council respecting the drawing up of the Report of the Exhibition and Trial of Implements at the York Meeting, for subsequent publication in the *Journal* of the Society.

2. Letter from Mr. Eaton, of Haverfordwest, recommending a drink of one quart of new milk fresh drawn from the cow, as an effectual preventive of hove in cattle, provided it be administered while the animal is able to walk about.—Prof. Sewell remarked that from the excited state in which the animals were while suffering under the complaint in question, it was difficult to administer any drink to them; but easy to make use of the effectual means offered by the trocar and probang. —Hr. Hudson, of Castleacre, had not found the trocar successful, inasmuch as the animals relieved by its use had not thriven well afterwards.—Prof. Sewell attributed that result to the employment of an imperfect instrument, and expressed his willingness to furnish Mr. Hudson with an improved trocar, similar to those he had recently presented to the Council.

3. A letter from Mr. Green, of Scarborough, on the period of suckling.

4. Letter from Mr. Goldsworthy Gurney on the subject of crops raised under a fibrous covering. Several of the members present favoured the Council with their remarks on the subject. Prof. Way considered it to open a wide field for experiment, as it included the action of light and electricity upon vegetation. Colonel MacDouall had found Grass, drawn up, to be deficient in nutritive properties. Mr. Hudson thought it would have been desirable if Mr. Gurney had stated what condition the sheep on his land under fibrous covering were in.

5. Notice of motion from Mr. Shaw, of London: "That, in order to afford greater facilities for obtaining correct analyses of manures, soils, roots, and other agricultural products, and to encourage the application of chemical science to practical agriculture, an annual grant of £200 be made to the English Chemical Agricultural Association."

Presents to the Society.—Mr. Read on the "Flexible Tube and Probang;" Mr. Parkes's "Essays on the Philosophy and Art of Land Drainage;" Mr. Coleman's "European Agriculture," vol. ii., part 8; Mr. Coxworthy's "Electrical Condition applied to Facts;" Mr. Blacker, of Armagh, on "Improving the Condition of the Irish Labourer;" and Mr. Thom's "Statistics of Ireland."

Adjournment.—Mr. Barker moved the adjournment of the Council to the 20th inst., and then over the following week, to the 4th of July.

A Special Council was held at the Society's House in Hanover-square, on Friday, the 16th of June. Present: The Earl of Yarborough, President, in the Chair; Sir M. W. Ridley, Bart.; Sir John V. B. Johnstone, Bart., M.P.; Colonel Austen; Mr. Raymond Barker; Colonel Challoner; Mr. Brandreth Gibbs; and Mr. Henry Wilson.

The PRESIDENT having communicated the result of his conference, as requested by the Council, with the Chairman of the London and North-Western Railway Company; and Sir John Johnstone having submitted to the Council the Report of the General York Committee held that day (at which, in addition to himself, Mr. Barker, Colonel Challoner, Mr. Druce, Mr. Gibbs, Mr. Hudson, M.P., and Mr. Kinder, had been present); the following points were confirmed and adopted by the Council:—

1. That the Tender of Mr. Abraham Braithwaite, of the Black Swan Hotel, York, for the supply of the Council Dinner at the ensuing Country Meeting in that city, be accepted.

2. That the Tender of Mr. William Thomas, of St. Leonard's-place, York, for the supply of the Pavilion Dinner, on the same occasion, be accepted.

3. That the recommendations of the Committee respecting the conveyance of live stock and implements, the arrangements for police, and the additional works suggested by them in reference to the completion of the Show-yards, be carried out accordingly.

A WEEKLY COUNCIL was held on Tuesday, the 20th of June; present, the Earl of Yarborough, President, in the chair; Lord Bridport; Hon. Capt. Dudley Pelham, R.N.; Sir Robert Price, Bart.; Mr. Almack, Mr. Barker, Colonel Challoner, Mr. C. Cure, Mr. Dyer, Capt. Dyott, Mr. Eggar, Capt. Evans, Mr. Fuller, M.P., Mr. Brandreth Gibbs, Mr. Glegg, Mr. H. Hall, Mr. Archer Houblon, Mr. Kinder, Mr. Overman, Mr. Parkins, Prof. Sewell, Mr. Slaney, M.P., Mr. Stansfield, M.P., Mr. T. Turner, Mr. T. R. Tweed, and Prof. Way.

Contracts.—The contracts for the Council and Pavilion Dinners at York, having been duly entered into by the Secretary of the Society with the parties whose tenders had been accepted at the previous meeting, were laid before the Council and approved.

Discussion.—Sir John Johnstone having called the attention of the Council to the subject of the practical discussion to take place at the Council Dinner at York, the Council decided on the following terms of the discussion in question namely.—

"On the Rearing and Management of Cattle from the time of their being dropped to the expiration of the first year; it being proposed that, for general convenience, each gentleman who takes part in such discussion should not speak more than 15 minutes."

Stewards.—Colonel Challoner submitted to the notice of the Council his suggestions for facilitating the arrangements of the Stewards, for the York Meeting, in their respective departments. These suggestions were unanimously adopted.

Mr. Luke Howard (the well known and venerable author of the "Climate of London") presented three parts of his large work, entitled "Barometrographia," exhibiting to the eye, by means of coloured diagrams on a large scale, the variations of the weather in this

country from 1815 to 1826.—Mr. Fulbrook communicated a letter on prognostics of weather for the present season.—Mr. H. Strafford, of 3, Camden Villas, Camden-town, presented a copy of the eighth volume of his reprint and continuation of Coates's Herd-Book, illustrated by 13 lithographic portraits from his original drawings of celebrated animals of the Improved Short-horned Breed, and printed with such an economy of type, arrangement, and collateral reference, as to include within less space than that occupied by either of the two preceding volumes, but in type of equal size, no less than 300 additional pedigrees of cows of that breed, and their produce.—Mr. Thomas Turner presented the treatise of his brother Mr. James Turner, V.S., of Regent-street, on the Foot of the Horse, and the One-sided Nailing system of Shoeing, published in 1832, to which he had alluded at the discussion which took place on that subject, on the 10th of May last, on the presentation of a work on the same subject by Mr. Miles, of Devonshire. Mr. Turner regarded his brother's work as the original text-book on the subject, and as farther valuable on account of the copious index it contained, adapted for a more extended work.—The President, Sir J. Johnstone, and Professor Sewell favoured the Council with interesting remarks on this subject.—Sir William Hooker favoured the Council with a further supply of the Hordeum cœleste, a skinless Barley, forwarded to him from Bombay by the Agros Horticultural Society of India.—Mr. Fuller, M.P., communicated, on the part of Sir T. F. E. Drake, Bt., the plan he had always found successful in driving away the fly from the young Turnip plant: namely, the application early in the morning, and repeatedly if necessary, of 10 lbs. per acre of sulphur vivum, to which a mixture of wood ashes and soot is to be added.—Mr. Apsley Pellatt transmitted a specimen of winter Barley grown by him at his farm at Staines, from a few grains, in the first instance presented to him as "Bavarian" Barley.—Capt. Dyott laid before the Council three consecutive draining pipe-tiles, furnished with collars, and 1¾ of an inch in diameter, taken up from a depth of 3 feet in meadow land belonging to Sir John Tyrell, Bart., M.P., in Essex, in consequence of their interior, in the course of 1½ years, having become filled with a mass of a long fibrous root, which entirely impeded the operation of the drains, and caused the water to cease from flowing.

The Council having ordered their thanks to the respective parties who had favoured them with these communications, adjourned over next week (that of Quarter Sessions), to the 4th of July.

NEW MEMBERS.

Abbey, Thomas, Dunnington, Yorkshire
Abinger, Lord, Abinger Hall, Dorking, Surrey
Atkins, Thomas, Kimberley, Wymondham, Norfolk
Bromwich, Thomas, Wolston, Coventry
Caldecott, William, Frating Lodge, Colchester
Carter, John, Scales Farm, Richmond, Yorkshire
Coleman, John, Runhall, Wymondham, Norfolk
Daniel, Rev. Robert, Osbaldwick, York
Dartmouth, Earl of, Sandwell-park, Birmingham.
Donkin, Edward, Westow, York
Eden, Robert, Hampton Court, Middlesex
Edmunds, Edmund, Rugby, Warwickshire
Felton, Clement, Dunton, Fakenham, Norfolk
Floyd, Cookson Stephenson, Holmfirth, Huddersfield
Galway, Viscount, M.P., Serlby Hall, Bawtry, Notts
Gibert, James, Perry Barr, Staffordshire
Gillett, John Brails, Shipton-on-Stour, Warwickshire
Hey, Richard, York
Hey, William, Leeds
Heywood, James, M.P., Weastehouse, Manchester
Holmes, Rev. John, Brooke Hall, Norwich
Hunt, Joseph, Addlethorpe, Spilsby, Lincolnshire
Isham, Rev. Robert, Lamport Rectory, Northampton
James, William, King-street, Hereford
Karkeak, W. F., Truro, Cornwall
Lawley, Hon. Beilby Richard, Escrick Park, York
Lawley, Hon. and Rev. S. Willoughby, Escrick Rectory, York
Littledale, Henry Anthony, Bolton Hall, Clitheroe
Lyndhurst, Lord, Turville Park, Henley-on-Thames
Marshall, Arthur, Headingly, Leeds
Penfold, James, Lancing, Shoreham, Sussex
Pugh, George, Coalport, Ironbridge, Salop
Ramsay, Sir James, Bart., Bamff House, Alyth, Perthshire
Robinson, George, Canaby, Bridlington, Yorkshire
Salter, W. P., Jun., Cottessy Lodge, Norwich
Shafto, Robert Duncombe, M.P., Hampworth Lodge, Salisbury
Smallwood, E., York
Smith, John, Crownthorpe, Wymondham, Norfolk
Timm, Dr., Scrooby House, Bawtry, Notts
Walker, John, Iron-foundry, York
Walker, James, Newberries, St. Alban's, Herts.

NORFOLK AGRICULTURAL ASSOCIATION.

SECOND ANNUAL MEETING OF THE SOCIETY, AT SWAFFHAM.

On Wednesday, June 21, the second annual meeting of this association was held at Swaffham. The day was fine, but the number of agriculturists was not so numerous as might have been expected, there being comparatively few from East Norfolk. It was, however, the largest meeting of the kind ever held in Swaffham; and, as many gentlemen from other counties attended, the proceedings during the day, especially the speeches after the dinner, were of a more than usually interesting character.

THE EXHIBITION OF STOCK

was in Mr. Randall's fields, and was very extensive. Most of the animals were of superior quality; but the great majority belonged to the Western division, partly

because the Eastern division is more adapted for grazing than breeding stock, and partly because the railway communication to Swaffham is not yet complete. The arrangements for the show were very judicious; the field being divided into two parts, one side for the implements and the other for the stock. The cattle and horses were ranged round the field, the sheep-pens being placed in the centre.

The Judges for BEASTS were—Mr. Skeet; Mr. Manning Keer, Framlingham, Suffolk; and Mr. Wm. Torr, Riby, Lincolnshire. For SHEEP: Mr. Samuel Bennett, Bickering's Park, Beds.; Mr. Moses Crisp, Letheringham, Suffolk; and Mr. John Ellman, Landport, Lewes. For HORSES and PIGS: Mr. J. S. Flowerdew, Hinderclay, Suffolk; Mr. R. Howlett, Wyverstone, Suffolk; and Mr. T. Margetson, of Wendling. For IMPLEMENTS: Mr. H. E. Blyth, Burnham, Norfolk; Mr. John Hudson, Castleacre, Norfolk; and Mr. John Sewell, Pickenham, Norfolk.

The following is the list of premiums:—

BEASTS.

For the best shorthorn bull, the Society's premium of £6—Mr. T. S. Atkins.

For the second best do., the Society's premium of £3—Hon. H. W. Wilson.

For the best Devon bull, the Society's premium of £6—Earl of Leicester.

For the best bull in the yard, of any breed, open to all competitors, the Hon. E. K. Coke's premium of £5—Mr. T. S. Atkins.

For the best shorthorn cow, in calf or in milk, the Swaffham cup—Mr. J. Gamble.

For the second best do., the Society's premium of £2—Lord Walsingham.

For the best Devon cow, in calf or in milk, A. Hamond's, Esq., premium of £5—Earl of Leicester.

For the second best do., the Society's premium of £2—Earl of Leicester.

For the best shorthorn in-calf heifer, under three years old, the Society's premium of £3—Lord Hastings.

For the best shorthorn in-calf heifer, W. Bagge's, Esq., premium of £5—Lord Hastings.

For the best Hereford in-calf heifer, under three years old, the Society's premium of £3—Mr. J. Hudson.

For the best Devon do., the Society's premium of £3—Mr. J. Hudson.

For the best fat steer, of any breed, under four years old, the Society's premium of £5—Earl of Leicester.

For the best fat cow or heifer, of any breed, under four years, the Society's premium of £5—Mr. R. Gillett.

Extra premiums of £2 were awarded to the exhibiters of those animals, bred by the exhibiters, in the above classes, to which premiums were awarded.

SHEEP.

For the best shearling Southdown ram, the Society's premium of £5—Mr. J. R. Overman.

For the second best ditto, the Society's premium of £3—Mr. J. R. Overman.

For the best Southdown ram of any age, the Society's premium of £4—Mr. H. Overman.

For the second best ditto, the Society's premium of £2—Mr. J. R. Overman.

For the best pen of three shearling Southdown ewes, the Society's premium of £4—Mr. H. Overman.

For the second best ditto, the Society's premium of £2—Mr. H. Overman.

For the best pen of ten Southdown ewe lambs, the Society's premium of £4—Mr. J. Hudson.

For the second best ditto, the Society's premium of £2—Mr. Hamond.

For the best pen of three Southdown ewe hoggets, bred by the exhibitor, the Earl of Leicester's premium of £5—Mr. J. Hudson.

For the best pen of three shearling Southdown wethers, Lord Walsingham's premium of £5 5s.—Mr. H. Overman.

For the second best ditto, Mr. H. Overman's premium of £2—Earl of Leicester.

For the best pen of twenty Southdown wether lambs, bred by the exhibitor—Sir W. B. Ffolkes's premium of £5—Mr. J. Hudson.

For the best pen of twenty Southdown shearling ewes, the Society's premium of £4—Earl of Leicester.

For the second best ditto, the Society's premium of £2—Mr. J. Hudson.

For the best Leicester or long-woolled ram, the Society's premium of £5; for the second best ditto, the Society's premium of £3; for the best Leicester or long-woolled ram of any age, the Society's premium of £4; for the second best ditto, the Society's premium of £2; for the best pen of three shearling Leicester ewes, the Society's premium of £4; and for the second best ditto, the Society's premium of £2, were all awarded to Mr. R. B. Harvey.

For the best pen of ten wether lambs, of any breed, the Society's premium of £4—Mr. E. Farrer.

For the second best ditto, the Society's premium of £2—Mr. J. Utting.

For the best pen of three shearling wethers, of any breed, the Society's premium of £4; and for the second best ditto, the Society's premium of £2—Mr. J. R. Overman.

An extra premium of £2 is paid to the exhibitor, being also the breeder.

HORSES.

For the best thorough-bred entire horse, of any age, having travelled in Norfolk during the present season, Lord Suffield's premium of £5—Mr. W. Jex.

For the best cart stallion, having covered at least fifty mares in Norfolk during the present season, H. Styleman Le Strange's, Esq., premium of £5, and the Society's premium of £5—Mr. T. Brasnett.

For the best stallion for saddle or harness, with the same conditions as above, the Society's premium of £5—Mr. Hamond.

For the best cart foal, the Society's premium of £3—Mr. W. Salter.

For the best cart mare, the Society's premium of £4; for the second best do., the Society's premium of £2 10s.; for the best three years old cart filly, the Society's premium of £3; and for the best two years old do., the Society's premium of £3, were awarded to Mr. N. G. Barthropp.

SWINE.

For the best boar, the Society's premium of £4—Mr. J. Hudson.

For the second best do., the Society's premium of £2 10s.—Mr. H. Overman.

For the best breeding sow, the Society's premium of £3—Rev. P. Gurdon.

For the second best do., the Society's premium of £2 10s.; and for the best pen of eight store pigs, not exceeding six months old, being of the same litter, the Society's premium of £3 10s.—Mr. J. Hudson.

IMPLEMENTS.

To the exhibiter of the best newly invented implement for the purpose of agriculture, the utility and price whereof shall be approved by the Judges, the Society's premium of £5—Mr. Garrett.

To the exhibiter of the second best do., the Society's premium of £4—Mr. Colman.

Premiums of 10s., 15s., £1, and £2, were awarded to four men as clippers of sheep.

Messrs. Garrett's thrashing and straw-shaking machine excited a good deal of attention. This machine is adapted for thrashing every kind of corn without so much as bending or ruffling the straw, and effectually thrashes out all the grain, without the least injury to the kernels. Messrs. Garrett also exhibited a drill, suited to all methods of cultivation of the vegetable crops, being made to work with any number of levers, having axle-trees to slip so as to alter the sizes to the different widths of ploughing, and parallel swing or fore-carriage steerage, enabling the man in attendance to guide the coulters or drill, without depending on the driving of the horses. The patent horse-hoe of the same firm attracted attention. This implement is so complete in itself, as to be fully suited to all methods of drill cultivation, whether broad, stitch, or ridge ploughing; and is adapted to hoeing corn or pulse of all sorts, as well as roots. An extra carriage has been lately added to this implement.

BECCLES FARMERS' CLUB.

On Wednesday, the 14th June, the highly interesting and important subject of "What are the principles of Tenant Right?" as well as "How they may be best secured," was discussed by this club. It was regretted by the different speakers that the words "Tenant Rights" did not, in their literal sense, convey a clear explanation of the grievances sought to be redressed. "Tenant Rights" were considered by this meeting to imply a claim for all undoubted improvements that shall remain at the expiration of the tenancy unexhausted, whether the occupation be yearly or otherwise; and that any erections made by the tenant (without the consent of the landlord) should be removeable by him.

It was most justly stated at this meeting that the owners of land no less than the occupiers, and that labourers in particular, were interested in making that compulsory by law which is now only partially practised in those localities where draining, marling, &c., are allowed for. The consequence of such enactments would be:—To owners of land improved tillage, and consequently an increased value; to the occupier, a security for his capital invested; and to the labourer, a more steady and certain employment. That with our daily increasing population every encouragement to agriculture ought to be given; having an especial tendency to combine vigour of body with social improvement of the mind.

In conformity with these facts, *not arguments*, the following resolutions were unanimously adopted by the club, in accordance with which a petition will be presented to the Commons House of Parliament without delay:—

Resolution,—

"That the principle of Tenant Rights consist of a fair and just remuneration for all judicious and undoubted improvements not exhausted at the expiration of a tenure, whether the same be yearly or for a term; with the liberty to remove all buildings erected by the tenant, without leave of the landlord, should the latter refuse to take them at a fair valuation."

That this definition of Tenant Rights offers to the landlord the best security for the improvement of his land, to the tenant the safest security for the investment of his capital, and to the labourer the advantage of an increased and permanent demand for his labour. That it is the opinion of this meeting that these rights are not adequately secured by the present laws relating to landlord and tenant, and strongly recommend farmers in general to petition the legislature to devise some measure to secure so desirable an object.

Willingham, June 26. C. GIBSON, Sec.

CHELMSFORD WOOL FAIR.

This annual fair, which being the first of the season in the kingdom for the public sale of wool by the growers, is looked to with much interest both by buyers and sellers, as in a great degree indicating and fixing the prices of the year, was held on Tuesday last, but fell far short, both in wool offered and business doing, of any former fair which we recollect. It seems that the state of the manufacturing districts, and the general aspect of the trade, led many of the growers to believe that nothing like the prices they felt disposed to accept would be offered them, and that under these circumstances it was most prudent, and likely to be the most profitable course, to hold their clips for a time, and wait the revival which usually follows a period of depression like this. Consequently but few brought their wool to the fair. There was less than half the quantity shown last year; and though there were many dealers present, including Messrs. Johns, Mr. Bell, the Messrs. Legge, from Bermondsey, Mr. Well, Mr. Cole, from Bishop Stortford, Mr. Miles, from Romford, Mr. Waite (manager for Mr. Oram), and Mr. Bailey, from the manufacturing districts, business was not very brisk. As only two lots were publicly disposed of at the dinner table, it is difficult to give anything like an average of actual prices, but we believe the average difference that divided the buyers and sellers was a halfpenny per pound, the growers in general asking or appearing

disposed to take 9½d for teg wool and 8½d for ewe, and the offers of the buyers being 9d. and 8d., though of course there were different offers to these for lots taken in the lump; but eventually this halfpenny was got over, and, with the exception of one, every lot pitched was sold, the hogget at 9d. and the ewe at 8d.

At three o'clock, about 40 gentlemen sat down to an excellent dinner, at the Saracen's Head Inn. W. Tufnell, Esq., took the chair, and among those present were Messrs. C. Matson, T. G. Ward, — Matson, — Matson, W. Hutley, C. Bell, W. Johns, T. Johns, T. Crooks, T. Smith, — Turvil, J. Well, G. Carter, T. Durrant, — Miles, W. Clark, J Smith, H. Cleeve, J. Malden, G. Hart, — Cole, — Bailey.

After the usual toasts,

The CHAIRMAN said, they would now proceed to the business of the day, and as there were several gentlemen who were wool buyers present, anxious for some gentleman to offer them their wool, he would suggest that those who wished to do so should send their offer to him in writing, and he would read it and forward it to the dealer proposed.

No offer being made for some time,

The CHAIRMAN gave, "Success to the Chelmsford Wool Fair." (Cheers.) Judging from the attendance at that table to-day, he thought they might congratulate themselves that the wool fair was not on the decline; and though it was true that, at present, prices were not so good as they could wish, and they could not expect to receive so much for their wool as they had done in former years, he hoped the fair would be well supported. He was informed by the secretary that there was not so much wool in the fair on this occasion as in former years. Last year 17 pitched their wool in the fair, and 15 sent samples. As this was not the place to make long speeches, their object being business, he would say no more, but give them, "Success to the Chelmsford Wool Fair." (Drunk with cheers.)

The CHAIRMAN afterwards said, he was happy to state that he had now an offer to make from one of the leading agriculturists in the kingdom—Mr. William Hutley, who offered to Mr. Bell 520 half-bred Leicester and Durham hoggets, 520 Down hoggets, 400 ewes (of which three hundred were half-breds and 100 Downs) making a total of 1,440 fleeces, at 10d. all round.

Mr. BELL said he exceedingly regretted that he could not accept them at this price. If he was open to a bid he should be happy to make him an offer, which would be for the 300 half-bred ewes 8d. and for the remainder 9d. including the Downs.

This was declined.

Mr. MALDEN offered to Mr. Johns 180 Kent hoggets, 360 Kent ewes and wethers, at 9½d. all round.

Mr. JOHNS offered 8½d.

Mr. MALDEN refused.

The CHAIRMAN said Mr. Durrant offered his wool to Mr. Johns—100 Dorset tegs, 50 Down and half-bred Leicester tegs, and 50 Down ewes, at 9d.

Mr. JOHNS said, as they generally found them shorn he would offer 8d. for them, and 9d. for the others.

This was declined, as was also the offer of Mr. Johns of 8½d., taking the wool altogether.

After some further offers, which were not accepted, Mr. J. Porter offered 137 Down tegs, 5 ewes, and 2 tups, to Mr. Johns at 9d.

Mr. JOHNS: I accept it. (Cheers.)

The CHAIRMAN gave the health of Mr. Johns as the first buyer.

Mr. JOHNS returned thanks, regretting that their London friends, who would have discharged the duty so much better, had left them.

Several lots were then offered by Mr. John Smith, Mr. George Hart, Mr. Simons, Mr. William Cousins, &c., when

The CHAIRMAN said Sir John Tyrell had authorised him to offer all the wool he had, and at the same time to apologise for his not being present with them, as he was most anxious to support the fair, and always attended when he could do so. He would have been there to-day, but was obliged to be in London, abandoning his own interest as a wool-grower to attend to the interests of the sugar-growers. On his behalf he would offer his wool, 165 Down ewes and 25 Down hoggets, to Mr. Johns at 9d.

Mr. JOHNS said the ewes being park fed, he would offer 8½d. all round.

This was declined, and after some time,

Mr. HART, of Mashbury, stated, he had sold his wool to Mr. Wells, at 9d. all round.

The CHAIRMAN then gave "To our next merry meeting;" and most of the company quitted the table.

DEODORIZING NIGHT-SOIL. — ELLERMAN'S LIQUID.—ASHES.

SIR,—In your last is a letter from Mr. Ellerman, showing that the iron in his liquid is not injurious either to soil or vegetation; but it seems to have escaped his notice, that in the state of sulphuret, or of protoxide (as it would be after the reaction of night soil upon the liquid), iron has been, both practically and theoretically, regarded as dangerous, at least to vegetation. This, he may say, and truly, can be remedied by exposure to the air; which if sufficient time be allowed, will peroxidize both the protoxide and the sulphuret.

But this takes time; and a main object, in deodorizing night-soil, is to render it more solid and portable, instead of thinning it with liquid; and this is effectually done by that very common and inexpensive substance *coal-ashes*.

Coal-ashes, fresh from the hearth, will so completely deodorize, and stiffen more than their own weight of the most putrid and stinking night-soil; that (if well intermixed) one would not guess what the mixture consisted of. By exposure to the air and damp the ashes gradually lose their efficacy in both respects; and very long exposure to rain, before mixing with the night-soil, renders them quite ineffective. Burnt earth, or clay, are also very effective for these purposes, and charred sods still more so.

But the most practicable means of bringing night-soil into general use, would be for the inhabitants of towns to throw their coal-ashes into the privy (not water-closet of course); by which means it would be kept always inoffensive, and the contents in a fit state to cart away as manure, even at mid-day.

The liquid refuse (slops and urine) are not so easy to render portable. Evaporation in towns is out of the question: absorption by saw-dust makes heavy carriage. The best means is perhaps, to dissolve in it the crude sulphate of magnesia, at the rate of ¼ lb. to the gallon (or more if pretty strong). The magnesia will then precipitate the ammonia and phosphoric acid as an insoluble salt, very effective as a manure, but a great deal of animal matter will still be lost.

J. Prideaux.

CALENDAR OF HORTICULTURE.—JULY.

The weather has undergone a decisive change, and while writing this introduction it is profusely showery. Rain had long been wanting: the ground had become dry to the depth of two feet under the great power of the sun, and plants became somewhat flaccid. The first effective rain of eighteen hours' duration commenced on Friday evening, June 9th: it penetrated the ground, and, being followed by the bright and genial Sunday of the 11th, produced most beneficial results. The long-continued thunder-storm of the 12th, with its profuse, heavy shower, perfected the required irrigation; and we may now expect to have excellent peas and beans. The former had become dry, husky things, almost void of flavour; and the latter, though as yet quite free from aphis, could not advance their pods. Fine weather and plenty of sun would prove blessings, and would also decide the correctness or error of those who have planted early potatoes to an extent which we have not observed since the calamity of the potato-disease occurred.

OPERATIONS IN THE VEGETABLE GARDEN.

Sow Cape broccoli for the last time, early *endive, kidney-beans, spinach, lettuce, carrots* (the early horn, for Michaelmas)—these early in the month; stone and Dutch *turnip* in the second or third week, for a main crop, but prefer a plot in the field to the garden; *onions*, to stand the winter, at the end of the month: these will supply the table throughout autumn, and again in spring. Sow all the turnip-rooted radishes for autumn and winter, likewise some of the salmon and short-top long *radish*. The broadcast sowing is to be preferred in soft, freshly-digged earth. Stretch rough twine across and diagonally, raised a few inches above the soil, to scare the birds. Sow *cabbage-seed* for winter and spring coleworts or open greens: the middle of the month will do well. The early York, and some of the delicate varieties, frequently form small-hearting plants, very delicate and acceptable.

Winter and Spring Broccoli.—Every kind may be transplanted at one period or other throughout July. This is usually a showery month, but it may prove hot and dry. In that case the plants from the seed or nursery rows should be put as speedily as possible, and in the evening, into holes filled with water.

Broccoli, cauliflower, and the cabbage family like a strong, deep, and highly-manured soil. Every bed should be effectually prepared by deep digging and thorough comminution; but it is true that, with few exceptions, a sharp winter, and particularly a sudden attack of severe frost, after a mild and wet autumn, make sad havoc with the plants. The best preventive, so far as my experience can avail, is trench-planting. After the regular preparation of the ground in summer, and when it has some time settled, trenches six or eight inches deep, and from two feet to thirty inches apart, and ranging east and west, are prepared as for celery. In these the plants are set at regular distances, according to the size they generally acquire, watered, and treated as others in the level surface. At the first approach of winter, when the weather and soil are dry, the trenches are filled up with fine soil from the sides, so as to cover the stems, making the plants to lead towards the north, and finally earthing them on the south side by more earth. The succession, in mild seasons, may be kept up by the late "Cape" to December; then by the early, and Grange's cauliflower broccoli, the protected, Portsmouth, hardy purple, and Siberian, and above all by that new and beautiful variety, "Chapman's cream-coloured," which is in perfection till the third week of May.

Celery.—Plant out in rich ground, as for broccoli above; some in six-inch trenches; others, and also *celeriac*, or turnip-rooted celery, on the flat surface, taking care to raise each plant without breaking the roots, and to cut off side-shoots and offsets to the principal leaves. Give ample watering with soft pond-water, if possible.

Prepare *mushroom* spawn, or obtain it of the nurserymen. When earthing up melon-plants, Mr. Williams' method of spawning one or two of the beds will be productive of a nice crop of mushrooms in the autumn.

Leeks.—Early in July dig a bed of the richest earth, manure it twelve inches deep; remove the leeks, and drop them into correctly-made holes, pouring in a little water only to fix the roots; let the bored earth act as a kind of sheath or case, and now and then give a little solution of guano of one ounce to the gallon, because, as the leek is an ammoniacal plant, *that* manure may exactly suit it.

Take up and dry *garlic*, *potato* and *summer-bulbed onions*, and *shallots*.

FRUIT DEPARTMENT.

The Vines on the open wall demand assiduous attention, the promised crop being early and abundant. Much, however, as to time, must depend upon the remaining part of June; for genial and warm weather then insures a fine expansion of the flowers. Persons generally, in my opinion, permit their shoots to run wild too long; hence, at the midsummer pruning, they are constrained to hack and hew the interlaced shoots at mischievous discretion. So long as they remain brittle, and the claspers do not interfere, it may be prudent to wait; but directly that the fruit is fairly open to view, and the bearers become a little tough, we would secure the retained shoots, train, prune, and keep them all open and in order. Continue to pinch back the laterals.

Apricots, *peaches*, &c., finally thin out. If a judicious disbudding have been practised, the shoots may now be laid in and secured.

Prepare strawberry-runners, by pegging down those plants next the parent stock, and cutting away the further advancing and secondary strings. The "British Queen" runs exuberantly with me, and it is quite in vain to check the runners from the plants: they keep on protruding, and I could save the plantlets by scores. This strawberry is late; it partakes, so far, of one of the parents—the "Elton." "Keen's Seedling" is the best of the earlier fruits; then the old, or "Myatt's Pine;" finally, the "Queen" and "Knight's Elton Pine." An extremely early sort from Scotland is about, but its name I have forgotten.

HOTHOUSE DEPARTMENT.

Vines.—Give abundance of air to the second and latest vineries. Colour must depend upon pure unrefracted light. Still, the leaves are of vast importance; and the primaries ought to be retained to support transpiration, laboration, and to give shade.

Melons require plenty of air, some shade, and water. In very hot nights it may be well to remove the lights, replacing them in the morning, with the addition of an oiled muslin or calico screen during full sunlight.

Pines ripen in succession. Cut them, and retain one or two of the best suckers to grow on their parent stems: time and strength will thereby be gained. These stocks can safely be planted in the open heath-mould beds of brick-pit, heated by hot water or circulating warmed air.

FLOWER-GARDEN AND SHRUBBERIES.

Maintain the greatest neatness in every part, by frequently dressing the surface of the soil with the rake or polished three-tined hand-fork: in doing this, remove every weed, old flower-stalk, and detached leaf.

Thin away over-crowding branches by the neatest and orderly pruning, so that every portion of a shrub may be duly exposed to air and light. Stake some trees, if required; but be cautious of forcing the wood through the roots, and also, so far as convenient, to conceal the stake.

Increase *roses* of the most approved kinds, by budding upon briar or Boursault stocks. July is the usual season, because in that month the sap stirs afresh, especially if the month prove showery. Every stock to be budded might advantageously be provided with three good shoots at its head. One could be tried first, at any time when the bark of stock and bud rise freely, and exhibit the surface of the sap-wood beneath *moist and shining*. Adroitness is half the business; but still, one would desire to succeed with all during the season. Therefore, if a bud fail early in July, let a second be tried in the fourth week, and again in August. The habit of each bud should be understood: one taken from a weak or delicate parent ought not to be inserted upon a coarse and luxuriant grower, and *vice versâ*. So, at least, we are now instructed by able writers.

Layer *carnations* and *picotees* about the middle of the month.

Propagate *pelargoniums*, and bring them forward speedily for winter stock. Good leaf-mould and sand produce the best compost for promoting first roots.

Shift *chrysanthemums* into pots of larger size, using sandy loam and rotted manure as compost: then plunge into a deep bed of screened ashes. An occasional supply of clear sheep-manure water will add vigour and colour to the foliage.

Mow and roll grass lawns. Clip box-edgings, especially when the weather is moist. Weed and roll gravel-walks.

RETROSPECTIVE.

The weather to this day has been generally cool—2 deg. below the average. Several days showery; many moist, and with little sun. Growth has been great and rapid, and vegetables are fine and abundant. New potatoes comparatively cheap, while every promise of a vast crop presents itself. People

complain that multitudes of the "British Queen" strawberry mould off before half ripe. Is this general? J. TOWERS.

Croydon, June 20.

NOTE.—The strawberry alluded to in a preceding paragraph is called the "*Aberdeen Beehive.*" So I learn from the *Gardeners' Chronicle* of the 17th. My attention was attracted to it by the peculiarity of its foliage, in Mr. Cuthill's garden, Denmark-hill. Its prolificity was talked of; but I find that, by a specimen sent from Manchester, the editor of the *Chronicle* was by no means gratified.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JUNE.

This has proved one of the finest months on record for the grain crops, as well as vegetation in general. The alternations of warm sunshine and mild rains have had a most beneficial effect upon the wheat crops in all parts of the United Kingdom; and our accounts agree in stating that there is every prospect of a comparatively early and an abundant harvest. Wheat has come well into ear in the southern, eastern, western, and midland districts; while, in the north, that grain is progressing under the most favourable auspices. In spring corn a very great improvement has taken place. Barley and oats are fully expected to be good crops; but beans and peas are likely, from the small breadth of land sown with them, to be beneath an average yield.

The imports of foreign wheat and flour, particularly those of the latter article, having been very moderate, the demand for most kinds has ruled steady, and, in some instances, the quotations have had an upward tendency. Those of barley, oats, and beans have considerably increased; owing to which, sales have progressed slowly, at drooping currencies.

From inquiries made in our large agricultural districts, it is tolerably certain that the stocks of English wheat still on hand are seasonably extensive. Those of barley are large; but those of oats, beans, and peas are by no means heavy.

Full average supplies of old potatoes have been received in the metropolis, coastwise, as well as by land carriage, in excellent condition. The imports from abroad have been unusually large; viz., 7,400 baskets from Hamburg, 5,220 do. from Rotterdam, 3,400 do. from Antwerp, and 1,000 do. from various other quarters. For all descriptions the demand has ruled heavy, and the quotations have not been supported. New potatoes—the accounts respecting which are very satisfactory—have been in moderate request, at from £12 to £18 per ton.

The wool trade has continued in a very depressed state, and prices have further receded quite 1d. per lb. Large quantities of colonial—30,000 bales—are in course of sale at auction. Although a full average quantity has found buyers, prices have receded 1d. to 2d. per lb.

The improvement in the appearance of the bine has had a most depressing influence upon the hop trade in the Borough and elsewhere, and prices have receded from 2s. to 4s. per cwt. The duty has advanced to £185,000.

The large supplies of grass food have produced much heaviness in the demand for hoth hay and straw, the prices of which have ruled extremely low.

The cattle trade has been in a very inactive state, arising from the increased supplies of fat stock on offer, and the currencies have somewhat receded.

From Ireland and Scotland our accounts are satisfactory, so far as the appearance of the crops is considered. Corn and provisions, generally, have been in but moderate request.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

One of the principal features we have to notice in connection with the cattle trade in the month just concluded, is the great increase which has taken place in the supplies of fat stock on offer in nearly, or quite, the whole of the principal markets—Smithfield in particular. This circumstance, coupled with the fine condition in which the bullock droves have come to hand, has had a most depressing influence upon the beef trade; and prices have ruled low compared with those at several previous corresponding periods of the year. As might therefore be imagined, the graziers—most of whom paid unusually high figures for store stock last season—have disposed of their beasts at a considerable sacrifice. Reports have found their way into some contemporary prints, to the effect that a great shortness of stock prevails all over the country. We, however, are in a position to give such reports a flat contradiction; at least so far as the numbers of beasts are concerned. At the present time, those in the eastern districts, and fit for consumption, are extensive; and it is estimated that the droves thence

this year, for the London market, will exceed those of last by upwards of 20,000 head. We therefore, anticipating as we do very extensive receipts from the north, very shortly after the setting in of the "season," see very little prospect of an improvement in the value of beef for some time hence. The decrease in the imports from abroad—the result of low prices—will unquestionably prevent any further fall in the quotations; yet the experience of the present year is calculated to produce great caution on the part of stock feeders in general as to their future purchases, An unusually large number of really prime beasts have been produced in Scotland; in fact, we may observe that that description of stock has been seldom equalled for weight than that brought forward since our last "Review."

From inquiries made in our flock districts, we learn that, though there has been a good fall of lambs, the supplies of mutton can scarcely be more than equal to the demand during next month. Prices of sheep and lambs are not expected to fall below their present point.

The immense influx of foreign calves has tended to depress the veal trade; and with that depression has resulted lower currencies.

The fine rains which have lately fallen in all parts of England have produced unusually large quantities of pasture herbage; so large, indeed, that much difficulty has been experienced in some quarters in keeping down the grass.

We regret to state that the epidemic has again appeared amongst the beasts; not a few of which have with great difficulty travelled to market. The foot-rot in sheep has appeared in very partial instances. The small-pox has again broken out amongst some of the sheep which have come in contact with the Merinoes imported from Germany. Surely, greater care should be exercised by the officials at the Customs. Some time since we were informed that a person was specially appointed to examine the foreign stock prior to its being landed; but on the 19th of the month we saw in Smithfield a drove of at least one hundred, which had been just landed from the Hamburgh steamer, frightfully diseased, and which were certainly not fit for consumption.

Very little improvement can be noticed in the quality or condition of the foreign importations; which have been far from extensive in number, as will be seen by the annexed comparative returns:—

IMPORTS OF FOREIGN STOCK INTO LONDON.

	Head.
Beasts	2,044
Sheep	9,591
Lambs	74
Calves	1,692

IMPORTS SAME PERIOD IN 1847.

	Head.
Oxen	1,319
Cows	3,275
Sheep	29,430
Lambs	995
Calves	844

The above gives a total for June, 1848, of only 13,401 head: but that for June, 1847, was not less than 35,863 head—showing a falling off this season for London alone of upwards of 22,000 head. The arrivals at the outports, including 146 oxen from Portugal, and 10 ditto from Spain, have been only 5,656 head; against 19,845 ditto in June, 1847. The actual falling off in the total importations has been not less than 36,651 head! This must be chiefly attributed to the high prices of meat in Holland, and the great fall which has taken place in those here. For instance, beef has been selling in Smithfield at from 1s. to 1s. 6d., mutton and lamb 4d., veal 8d. to 10d., and pork 2d. to 6d. per 8bs. beneath the rates paid during the same time last year.

The numbers of stock brought forward in the above market have been as under:—

	Head.
Beasts	17,452
Cows	509
Sheep and lambs	152,730
Calves	3,846
Pigs	2,641

SUPPLIES AT CORRESPONDING PERIODS.

June,	Beasts.	Sheep and Lambs.	Calves.	Pigs.
1844 ..	13,290	169,800	1,840	2,600
1845 ..	13,476	131,390	2,212	2,345
1846 ..	15,284	163,080	1,321	2,580
1847 ..	16,222	148,660	3,054	2,488

Since our last the bullock droves have been derived as follows:—

	Head.
Norfolk, &c.	6,300
Western, and midland counties	3,000
Other parts of England	1,900
Scotland	3,180

Beef has been selling at from 2s. 10d. to 4s.; mutton, 3s. 10d. to 5s.; lamb, 4s. 10d. to 6s.; veal, 3s. 4d. to 4s. 4d.; and pork, 3s. 10d. to 4s. 8d. per 8lbs., to sink the offal.

Newgate and Leadenhall markets have been somewhat heavily supplied with each kind of meat; the demand for which has ruled dull, at drooping prices. Beef has sold at from 2s. 8d. to 3s. 6d.; mutton, 3s. 4d. to 4s. 8d.; lamb, 4s. 8d. to 5s. 10d.; veal, 3s. 4d. to 4s. 4d.; and pork, 3s. 8d. to 4s. 6d. per 8lbs., by the carcase.

NOTTINGHAMSHIRE.

The general aspect of the country is of the most pleasing and promising kind. Our pasture fields are abundantly supplied with grass, and the late bountiful rains have saturated the land so much, that now we have little to fear as regards drought. Mowing of seeds (alias clover) has commenced in most localities, and the crop is an average one. The natural grass crop will fall heavy. A great breadth of turnips is already drilled in, and the plants are generally healthy. The management of the turnip plant is now getting better understood; and no doubt the time will come when the pathology of the diseases of plants will be better understood than at present, and when vegetable physiology will form a part of the business of the farmer. He who sows his grain without a knowledge of those laws frequently sows to the wind and reaps the whirlwind. Long experience, together with long observation, has taught him much; and respect ought to be paid to habits and customs. But he who sows his seed, and is dependent for his livelihood on the growth of his crop, ought to be so acquainted with all natural laws as to almost ensure, if not altogether ensure, the end intended. If his soils are dry, and the weather is hot and dry, he ought to compress his soils so as to produce all the affinity he possibly can from the lower strata of earth; and if the weather be cold and wet, a contrary course would be to his benefit, and prevent the plant, as too frequently is the case in such weather, from being yellow and unhealthy. As regards the turnip fly (aphis, or any of the same genus) destroying the plant, it has never yet been proved, and in our opinion never will. Insects are predatory tribes brought into existence to answer the purposes of an all-wise Providence; and when the end is answered, they cease to be as a whole. They are an *effect*, not *a cause*. We are digressing from the first intended subject; but the value of the turnip crop is so important, that whatever may be said on that score is, we think, a sufficient apology. The potato crop at present promises well, and should the root ultimately be free from disease, the price must once again return to its former reasonable value; a greater breadth, we believe, never was planted. Fallows on strong soils are in a forward state. Beans have been much benefited by the late rains, but will be short. The wheat crop never was better in the memory of any one: it is, as a whole, all we could desire. The writer travels every week the length and breadth of the county, and to see any thing like a deficient crop is the exception; and should fine weather continue, it must be most abundant. Oats are short, but the late rains have wrought wonders, and we may expect a good crop, but not a great length of straw. Barley will be a very uneven crop, and we should think must work badly in the hands of the maltster; but much depends on the future. We have always found, as a barley grower, that in case of its starting unevenly, the only remedy —and a remedy we believe it is—is to let the crop stand till that which started last has arrived at full maturity; and no species of grain is so well adapted for such a system as barley, for it will bear ripening to a higher point than any other description of the cereal crops. This idea may, we trust, be of benefit to farmers who might otherwise suffer. Our store cattle markets are languid. Fat stock markets are drooping, and we are afraid the season will be an unprofitable one to the grazier. Corn markets are heavy ones—and no wonder, with the prospect before us. The demand for labour is limited, while an unlimited amount of labour is required. How much land might be profitably drained! How much inferior grass land might be broken up, and find employment for thousands! Might not turnip husbandry be doubly extended? "Property has its duties as well as its rights," and the owner and occupier are bound by both moral and divine law to find employment for the poor around them, and cursed is he that regardeth not the cry of the poor.—June 22.

SUFFOLK.

Wet is now making up for the dry weather of May. The following extract from the letter of a correspondent, dated June 6, 1848, will give an idea of the difficulties which the heavy land farmer of this county has contended with during the first half of the year 1848. "There has been a gentle shower this afternoon, June 6th; but rain—real rain—we have not had these six weeks. The first part of the year all *water*, that left the land *slush*, then *mud*, then *dough*; and now bricks, from continued drought. It has not been a genial season, but still the country looks promising." From early in February to the end of April continued rain rendered the soil too wet for seeding operations, by converting the heavy clays into "mud," which the hot and dry weather of May baked into "clods." Though the heavy land farmer has experienced an unfavourable seed time, yet the season has been very propitious to good farmers and to good land, that never suffers from the extremes of moisture and drought to which inferior heavy or light land is subject. If we look to the yearly signs which nature affords in the returning vegetation, and compare these with those afforded us in bygone years, we find—from the observations of our meteorological friend, the author of "The Climate of England"—the spring of 1848 has afforded instances of unusual early vegetation. "All trees but ash were

in full foliage very early in the month, May; the ash has followed without much delay; and the fact of the oak having preceded it, is a symbol of an approaching fine summer. The usual time for the hawthorn flower is May 20th; in 1837, it was even as late as the 5th of June, but this year on the 7th of May; lastly, that blushing gem of summer, the dog-rose, which we annually look for after June the 13th, was this year open on May 23rd. The unusual earliness of vegetation is not to be wondered at when we consider how mild the whole time was from early in February, although rainy, till near the end of April. The foliage now is greatly defaced and mutilated by caterpillars and aphides, especially the apple, pear, and rose trees. The thermometer has been almost daily far above what is usual in May"—varying from 74 to 84 degrees between the 4th and 29th—"whilst the nights were much warmer than usual, producing a mean temperature for the month of 60·88 or nearly 61 degrees; this is very far above the usual mean of May. The greatest storms of the month (May) were on the 14th, at Andover, Hants; and on the 17th, over the counties of Leicester, Northampton, and Nottingham, when the beautiful spire of Whittlesea Church, Peterborough, was struck by the lightning. Awful hail attended these storms. And we had a similar storm at Thwaite, on the 20th of May: hail fell to the depth of several inches in some parts of this parish, and lay encrusted together next day. When we look on one side only, we may think it a terrible thing to see the damage by hail in a few spots—the individual loss to the farmer, easily repaired by insurance, and the loss of a few lives by lightning at times: but may we not also turn to the other side, and gratefully testify how much general good is produced by the natural effects of a storm in purifying our atmosphere from baneful vapours? In further proof of the forward state of vegetation, the wheat ears have burst from their stems, having unfurled their covering for a week past, June 7th; in ordinary times we reckon it quite time enough to see wheat ears by June 15th. There is a very great improvement in the general appearance of the corn fields of late; the wheat especially has shown a favourable change in the colour of the blade, and we hope the prospect is fair." Towards the latter part of May, carrots and beet sowing was generally completed, the land in too dry a state for a very successful vegetation of the seed; and complaints are heard of the difficulty of obtaining a plant of these all-important crops. Swedes have been sown in a more favourable tilth. Rye-grass, sainfoin, and clover for stover, are of light crop on inferior soils. Beans are backward, and short in the stalk. Barley has been, and is, suffering from a late and unfavourable seed time; an average crop can hardly be expected from its present appearance. The wheat crops look well generally, and will come early to harvest; but on the poorest of both the light and heavy lands the crops will be inferior. The late rains have undoubtedly improved the appearance of the crops; but on the cold clays and burning sands the produce must still be under an average. The following is the quantity of wheat and barley sold in Suffolk, and the average price: Week ending May 27—wheat, 8,818 qrs., 46s. 8d.; June 3—wheat, 7,351 qrs., 47s.; June 10—wheat, 8,890 qrs., 46s. 3d.; May 27—barley, 2,190 qrs., 31s. 6d.; June 3—barley, 1,706 qrs., 31s. 3d.; June 10—barley, 2,071 qrs., 31s. 2d. The supply of wheat has been good, with declining prices; that of barley quite equal to the demand. Good beans have commanded higher prices. Both lean and fat stock have been selling at considerably lower prices. Beef is now worth 6s. 6d.; mutton, 7s. 9d. to 8s. per stone of 14lbs. —June 26.

SOMERSETSHIRE.

The wheats in this county have stood up, on the whole, pretty well. In early districts the blossom is now over; on the stiff clays and later lands it is now in blossom. This is the most precarious season, and some estimation may now be formed. I will just notice that which is in favour of and unfavourable to a fair crop: standing up on the whole well, as yet free from blight; the rain on the poorer soils increasing the size and number of ears, and for the past week some fine sun for kerning. On the other hand, the ears are small and not come into blossom together, the under part of the ear deficient, much of it thin on the ground; and for the early-sown and forward wheat, the weather during the bloom very unfavourable for the turn; and this afternoon's close rain, with high wind, is again unfavourable. On the whole, I fear our prospects of a good wheat-crop are very doubtful. Barley, up to this time, is altogether promising. Oats on low situations are injured by the frosts we had the beginning of the month. Peas likely to be good in general. Beans: The winter ones are very finely podded; but in many places the leaves and stems are much blighted. Whether the leaves have performed their function, and will not materially lessen the quantity or injure the quality of this crop, remains to be proved; but within these few days the spring-sown ones have been affected in the same manner, which appears to increase in the same rapidity as on the winter ones, and is likely to do much more serious injury. Potatoes: That there have been many instances of the re-appearance of the three last years' disease, I believe is quite correct, although on an extensive examination in this place, we could not discover it. They have come up rich, and made vigorous growth; and if nothing harms them, there is every prospect of a very large crop, according to the quantity put in; but there is something within these few days

about the leaves I do not like the appearance of. They have sold from 1s. 8d. to 1s. per peck, and are now fine. A great deal of the mangel-wurzel has failed, and the white carrots are bad. We were in hopes the rain would have made our morsel of a swede crop favourable; but the ravages of the fly during the few fine days we have had have destroyed a great portion of them. The early-mown clovers have been spoiled, as well as the early meadow. Mowing was suspended, but has re-commenced in earnest this week. A little has been well secured, but the close, heavy, and apparently lasting rain of this afternoon will alter the chances of prime well-made hay. Crops heavy; grass satisfactory.—June 23.

DORSETSHIRE.

The crops of growing wheat and lent corn in this county were never finer, nor more promising of an abundant harvest if we should happily be blessed with seasonable weather from the present time up to the hour of gathering. In the village of Pimperne, 2½ miles from Blandford, the wheats are of the most splendid description. At Iwerne Courtney, 5 miles from Blandford, on the lands of Sir Edward Baker, Ranston-house, as far as the eye can discern, nothing but waving ears of corn, breaking down their slender stalk with weight and size, are to be seen. In the parish of More Critchell, 8 miles from Blandford, on the farms of Charles Henry Sturt, Esq. (1,100 acres), wheat, barley, and oats are exceedingly luxuriant. At Langton long Blandford, on the estates of Sir John D'Oyley, Bart, and James John Farquharson, Esq., the growing wheats stand 6 feet high in many places, with a fine bold ear, in full bloom; the barley and oats exceedingly strong; peas and beans promising to yield a full average crop: in truth, a finer or a more promising season could not, by possibility, ever be exceeded. The same cheering prospects present themselves around Bridport, Beaminster, Dorchester, Poole, Cranborne, Wimborne, Piddletown, Child-Okeley; on the estate of Henry Kerr Seymour, Esq., M.P., of Hanford-house; at Netherbury, on the lands of George Tilley Gollop, Esq., of Strode-house; at Minterne Magna, estate of Edward St. Vincent Digby, Esq., Minterne-house; and Colonel Henry Porter; on the lands of the Marquis of Westminster, Motcombe-house; John Samuel Wanley, Sawbridge; Erle Draix, Esq., M.P., Charboro' Park; the Right Hon. Earl of Portarlington, Milton Abbey, &c., &c., there is every prospect of even a better or rather greater yield than last year, particularly of wheat. The long-continued rain has injured a large breadth of mown grass, in some parts to such an extent as not to be now worth making and stacking; but to compensate for that loss, there is every prospect of an excellent second crop. The breadth of potatoes planted this spring is nearly double that of last. The early ones now fit to dig, or nearly so, yield abundantly, and are of superior quality, clear and bright in the skin, without the least appearance of scab or disease: the later planted look very fine and strong in the haulm. The meadow land seems generally well covered with oxen and sheep, generally in good condition. Prices for lean stock have gone down during the last two months full £2 per head, and for sheep from 5s. to 6s. per head; yet the price of butchers' meat still keeps very high. Bread is moderate, 10d. to 12d. the gallon loaf. The poor farm labourers are still ground down in the county to the lowest possible rate of wages, 8s. per week being the general figure for six long days' toil: with that they are expected to pay rent of a cottage 1s. to 1s. 6d. per week, keep in food 8 to 10 in family, and purchase clothing, firing, &c., for the whole; an expectation out of the power of the strictest economist to perform.—Blandford, June 20.

EDINBURGHSHIRE.

The weather since our last report has been rather changeable and unsettled, but upon the whole favourable for the growing crops. However the heavy rains of Tuesday last did some little injury to the wheat crop where strong and well forward, and at same time interfered with field work rather injuriously on damp soils. Thursday and yesterday were dry, but we are this afternoon experiencing a heavy rain, with a north-east wind, which continuing for any length of time will be hurtful to the wheat crops, the hay harvest, and the sowing of turnip, as well as the young crop just brairding. Generally speaking, the wheat crop presents about an average appearance for the season; but the opinion is less favourable of it than it was when we last wrote, especially in reference to autumn sown wheat, which is thinner on the ground and less vigorous on the stem than could be desired. Barley and oats have made a wonderful improvement of late, and these crops are very luxuriant for the season, indeed it is feared that if dry weather does not set in they will be in many instances too strong. Beans are not grown so extensively this year in the county, but the crops looks generally well and promising. Hay has been much benefitted by the late rains in the high districts, and the crop may be considered an average. Cutting has commenced around Edinburgh, and in the early situations, but is retarded by the soft weather. Potatoes are now mostly brairded and appear full of health and vigour, except in a few cases where seed from foreign parts was used, and which were heated in the vessel to an extent to destroy the vitality of the seed, where this occurred the turnip crop has been subsequently substituted. Turnip sowing is prosecuted with energy, but a good many are yet to be put in; the first sown Swedes are not looking well, having been generally attacked by "fly," and so much destroyed that the ground has in several cases been resown. Those sown about the end of May look well, but those newly put in are apt to suffer from an excess of moisture. Guano is very generally used for raising this crop, and has been found very successful in by past years; but where practicable it should always be used along with farm-yard manure in preference to applying it alone; when the latter mode is adopted, and the crop carried off the ground, it leaves the land in very poor condition, and hazards the succeeding crops.—June 17.

AGRICULTURAL QUERY.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—I wish to ask, through the medium of your magazine, if there be any law to prevent graziers or breeders from running their bulls loose in the fields? I, and I am sure many breeders as well as myself, are greatly annoyed by having a lot of mongrel bulls running loose in the parish. I need not explain how; but I will be much obliged if you or any other person will suggest a remedy.

I am told there is an Act of Parliament to prevent the nuisance; but my professional man tells me he does not know of one, and that my only remedy is an action at law, in which case, perhaps, the remedy would be worse than the disease.

I am, sir,

Yours obediently,

A BREEDER.

METEOROLOGICAL DIARY—1848.

	Barometer.		Thermometer.			Wind and State.		Atmosphere.		
Day.	8 a. m.	10 p.m.	Min.	Max.	10 p.m.	Direction.	Force.	8 a. m.	2 p. m.	10 p. m.
	in. cts.	in. cts.								
May 22	30.34	30.37	47	67	61	N. Easterly	gentle	cloudy	sun	fine
23	30.37	30.37	51	67	57	Easterly	lively	hazy	sun	fine
24	30.37	30.37	47	67	56	E. by N.	lively	fine	sun	fine
25	30.36	30.26	49	70	61	East	fresh	fine	sun	fine
26	30.22	30.12	49	75	61	W. by North	fresh	fine	sun	fine
27	30.19	30.20	54	63	56	E. by N.-by S.	gentle	cloudy	sun	fine
28	30.23	30.14	46	65	57	E. by North	lively	fine	sun	fine
29	30.10	30.06	42	72	62	N. by E. S.W.	lively	fine	sun	fine
30	30.10	30.20	55	69	57	N. West	variable	cloudy	sun	fine
31	30.20	29.94	47	65	53	W. S. W.	variable	fine	cloudy	fine
June 1	29.96	29.83	46	58	49	Westerly	lively	fine	cloudy	cloudy
2	29.60	29.50	49	63	50	S. by S.W.	variable	fine	sun	fine
3	29.49	29.50	45	61	51	S. by West	variable	cloudy	sun	fine
4	29.47	29.77	47	64	54	S. by West	gentle	cloudy	sun	fine
5	29.83	29.83	51	67	56	S. by West	fresh	fine	sun	fine
6	29.87	29.93	50	68	55	S. West	fresh	fine	sun	fine
7	29.97	29.94	50	67	56	S. West	brisk	fine	sun	fine
8	29.91	29.82	51	63	54	S. West.	very brisk	fine	cloudy	sun
9	29.83	29.80	48	64	56	S.W. S.	very brisk	fine	cloudy	cloudy
10	29.74	29.70	53	58	55	South	gentle	cloudy	cloudy	cloudy
11	29.80	29.90	51	67	57	W. S.W.	gentle	fine	sun	cloudy
12	29.80	29.67	54	64	57	Every way	gentle	cloudy	cloudy	cloudy
13	29.60	29.97	45	59	59	W. by South	brisk	fine	sun	fine
14	30.04	30.92	46	68	60	Southerly	gentle	fine	sun	fine
15	29.94	29.90	55	72	56	E. by North	lively	fine	sun	fine
16	29.83	29.94	56	73	66	S.E. S.W.	gentle	fine	sun	fine
17	29.93	29.89	61	66	60	S. by W.-by E.	gentle	cloudy	cloudy	cloudy
18	29.97	30.05	55	66	62	Westerly	gentle	cloudy	sun	fine
19	30.13	30.20	53	62	56	North	lively	cloudy	cloudy	cloudy
20	30.22	30.17	51	61	57	N. by W.	gentle	cloudy	cloudy	cloudy

ESTIMATED AVERAGES OF JUNE.

Barometer.		Thermometer.		
High.	Low.	High.	Low.	Mean.
30.460	29.60	90	37	58.7

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
65.7	50.13	57.60

Weather and Phenomena.

May 22: Beautiful, after night rain. 23: Superb. 24: A few streaky clouds form; still dry. 25. Very hot sun. 26: Rather sultry; hazy above. 27: Change of wind—much cooler. 28 and 29: Still cool; wind changeable. 30: Some clouds and sign of change. 31: A brisk shower.

Lunations.—Last quarter: 25th, 13 m. before midnight.

June 1: Pretty fine; changeable. 2, 3, 4, and 5: Wind brisk early; lulling at night—showers. 6: Weather settles, and becomes beautiful 7: Cirrus, wavy, with fine cumuli. 8: Some fine gleams; threatening clouds. 9: Fine day; rainy evening. 10: Rain all night, and through the day. 11: Beautiful till sunset, then a cloudy bank. 12: Thunder showers p.m.—profuse rain. 13: Showers with fine gleams; cold. 14: Fine. 15: Wavy, cirro-stratus, but fine. 16: Sweet balmy air; doubtful. 17: Wet overnight; threatening clouds. 18: Balmy air; generally overcast. 19: Altogether cloudy, and with much rain. 20: Overcast, airy, improving.

Lunations.—New moon: 1st, 2 h. 40 m. p.m. First quarter: 8th, 5 h. 16 m. afternoon. Full: 16th, 8 h. 58 m. afternoon.

Remarks referring to agriculture.

The copious rains have effected all that was required; they have improved the crops beyond hope. Everything is flourishing. Chevalier barley sold in November was in full ear in May—a month in advance. Thin sown wheats have triumphed. Wheat in many places showed ear about the 28th of May, and vast breadths have been in flower above a week. We should now hail the sun especially, because it would much favour the later hay crops.

John Towers.

Croydon, June 20.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF JUNE.

When we last addressed our readers we had had a drought of nearly a month's duration, and the country then exhibited evident symptoms of a want of moisture. Wheat alone was benefited by the dry weather in May; all the Lent-sown crops suffered materially, and the grass lands were so much injured thereby, that instead of a heavy hay harvest confidently expected previously, the produce has turned out decidedly light. The fine showers which have fallen at intervals throughout June came too late for the grass lands, but everything else improved rapidly, and we are happy to say that our prospects in regard to the future are far more promising than was the case a month ago. More auspicious weather than that with which we have been favoured during the first three weeks in June, could scarcely be desired; latterly some slight injury may perhaps have been done by the heavy showers which have fallen; but as the corn is not as yet in so forward a stage as to prevent its recovering an upright position where it has been beaten down by the rain, we do not apprehend that much harm will result from its having been partially lodged. On the whole, the reports in respect to wheat are satisfactory; here and there a loss of plant has, no doubt, been occasioned by the excess of wet in the early part of the spring; but taking the crop generally, there is reason to calculate that the yield will not fall much, if any, short of an average, provided it should be well secured. The plant is quite as forward as in moderately good seasons; in the south it has been in ear for upwards of a fortnight, and in Scotland it shot before the middle of the month. In some localities the ears are said to be rather short, but this is not by any means a universal complaint; indeed, the greater proportion of the accounts describe the crop as looking promising. Of the spring sown crops we are not able to give so favourable a report, still we are happy to state that affairs wear a much better appearance than at the close of May. Under the combined influence of warmth and moisture, the late-sown barley and oats vegetated rapidly, and are now nearly as forward as those got in earlier. Beans and peas, which at one time threatened to be almost a failure, have also improved materially; and though it is not to be expected that the effects of a bad seed-time and an unauspicious spring can be wholly remedied, still the deficiency is not likely to be so considerable as was feared in May. In addition to the change for the better above referred to, we have a prospect of a large yield of potatoes. As yet we have heard of no well authenticated cases of the appearance of the disease which proved so destructive the last two or three years. We say *well authenticated cases.* Rumours there are, but mostly of too vague a character to be entitled to much credit. We do not, however, anticipate that a disorder which has prevailed several succeeding years will disappear all at once; but we certainly are inclined to hope that it will be much less general this season, from the present vigorous and healthy aspect of the plant. A favourable potato harvest would go far to compensate for any deficiency which there may be in the produce of spring corn, pulse, &c., as the breadth of land planted with the root is far greater than has been the case since 1846. The comparatively mild form of the disease last year, had the effect of restoring something like confidence; and notwithstanding the hazard attending the experiment, nearly as many potatoes were put into the ground this spring as previous to the first appearance of the disorder. This has been more particularly the case in Ireland, hence the importance of a good or bad result can scarcely be overrated. On this point the future range of prices of wheat will, in some measure, hinge; and altogether there are at this period so many contingent circumstances of which nothing positive can be known, as to render it wholly impossible to say, with any degree of certainty, what turn the trade may take. For some weeks past the tendency of prices has been rather upwards; the rise has not been caused by any fears regarding the growing crops, but has been owing almost wholly to the smallness of the supplies brought forward by the growers. So very sparingly have the markets been supplied with wheat of home growth, that had it not been for the assistance of foreign, the millers (who are, and have for a considerable time been, short of stocks) would have experienced much difficulty in securing sufficient to keep their mills going. Whether farmers will continue to pursue the same course, or deliver more freely, will depend on the opinion they may form next month of the probable result of the harvest. Should the crops go on prosperously, they will most likely deem it prudent to dispose of a part of what they may still have on hand, whilst the occurrence of anything threatening to injure the growing corn would

most likely have the effect of causing small deliveries. We may, however, as well remind our agricultural friends, that early in the ensuing spring the duties must come off altogether; and at the same time to call their attention to the generally favourable accounts from all the northern countries of Europe, relative to the appearance of the crops.

With a comparatively high duty, and serious interruptions to the regular course of trade in consequence of the war between the German Confederation and Denmark, the supplies from the continent have not been inconsiderable; still a large quantity of wheat of last year's growth is held abroad, most of which will unquestionably find its way to this country. We are therefore inclined to think that nothing, except decidedly unfavourable weather, can cause any material rise in the value of food in this country.

With reference to the transactions which have taken place during the month, we shall confine our remarks more particularly to Mark Lane, as the fluctuations there have, as usual, been pretty closely followed at the other leading markets.

The arrivals of wheat coastwise into London have been small throughout the month, the weekly supply having averaged very little over 4,000 qrs.

Upon the first setting in of the fine weather, early in June, the millers conducted their operations with extreme caution, probably under the impression that the receipts would increase. The utmost they could succeed in effecting was, however, a decline of 1s. to 2s. per qr., which took place on Monday, the 5th June. The wants of buyers were generally too urgent to allow of their holding off for any lengthened period, and finding on the following Monday that the arrivals were no better than before, they bought freely, putting a stop to the retrograde movement. Subsequently factors rather raised their pretensions, and the decline of the 5th was fully recovered on that day fortnight. Last Monday there was rather a better display of samples from Essex and Kent, but the weather having then an unsettled appearance, the millers purchased pretty freely; quotations at the close of the month were therefore fully as high as they were when we last addressed our readers.

Notwithstanding the blockade of some of the Baltic ports by the Danish fleet, we have received good supplies of wheat from that quarter, about 40,000 qrs. of foreign, principally from the north of Europe, having arrived at the port of London alone since the commencement of the month. A considerable proportion of this supply has consisted of good and fine qualities; our millers have consequently been but little inconvenienced by the scanty nature of the home receipts. Importers have generally preferred to pay the current duty and sell from on board ship, to landing in bond; but they have manifested no disposition to force sales—indeed, they have availed themselves of the upward movement in the value of English, and have succeeded in obtaining rather better prices than those at which business was done towards the close of last month. At one period good qualities of red Baltic, weighing 61lbs. per bushel, were sold at 46s. per qr., and fine, of 62 to 63lbs. weight, at 48s. Since then, however, holders have insisted on an advance of 2s. per qr., and prime Rostock cannot now be bought below 50s. per qr. The highest price we have heard of for Danzig was realized on Monday, the 17th, viz., 59s. per qr.; this was paid for a small lot of superior high-mixed, such being exceedingly scarce. The demand for low descriptions of Black Sea wheat for shipment to Ireland has wholly ceased, and nothing of interest has lately occurred in granaried parcels. Polish Odessa, of good useful quality, may be quoted 42s. to 44s. per qr.

The fall which took place in the value of wheat in the early part of the month is now apparent in the averages and the aggregate for the six weeks having fallen below 49s. per qr., the duty has risen to 9s. Whether it will remain at that point, or advance to the maximum, will depend on the next general return for the kingdom, published about the time this goes to press. That importers must have lost by the late importations is certain, and though prices have recently receded at the continental ports, still there is at present not much encouragement to purchase abroad, the only inducement being the moderate range of prices, and the consequent chance of a material rise in case of unfavourable weather occurring this month or during the harvest time.

The top-price of town-made flour, after having remained stationary at 46s. per sack for a considerable period, was put down 2s. by the millers on the 5th of June. Many of the bakers had long been waiting for this reduction, and had allowed their stock to run very low; as soon, therefore, as the concession was made, an impetus was given to the demand, and the consequent necessity to buy wheat to supply the same caused the subsequent rise of 1s. to 2s. per qr. in the value of the latter article. Within the last week the inquiry for flour has again fallen off, but as neither millers nor bakers have sufficient to go on long, we may expect a good wholesome trade. Of country-manufactured flour the arrivals have been very moderate, and scarcely any foreign has come to hand; in the value of the latter no change requiring notice has occurred, but good makes of the former, after in the first instance receding in proportion to the decline on town-made, subsequently rallied fully 1s. per sack.

Barley of home growth appears to be nearly exhausted, only trifling quantities having for some time past been brought forward. The demand having, however—as is usually the case at this season of the year, when the maltsters do not generally buy—been confined principally to grinding sorts, of which we have had abundant arrivals from abroad, prices have given way materially. The total quantity received from abroad during the month does not fall much short of 50,000 qrs., of which a very large proportion has come to hand out of condition; it is therefore by no means surprising that the market should have become dull, particularly as importers have manifested great anxiety to sell from on board ship, to avoid landing expenses and loss of measure, which generally attends the landing of all grain which has become heated by the voyage. Capital samples of barley, weighing 53 lbs. per bushel, have lately been offered freely at 27s. to 28s., and secondary kinds have been sold at 24s. to 25s. per qr.; whilst still lower terms have been taken for inferior, out-of-conditioned sorts. Meanwhile there has not been much change in the nominal value of fine English malting samples.

The transactions in malt have been on quite a retail scale; but less effect has been produced on the value of the article than might have been expected by the important fall which prices of barley have undergone. This may be accounted for by the moderate character of the supplies, and the certainty that the stock will not be added to for months.

The arrivals of oats from our own coast and Scotland into London have been perfectly insignificant; and from Ireland not so much as we are frequently in the habit of receiving in a single week has come to hand during the whole month. The trifling nature of the home supply has, however, caused no inconvenience, and more than sufficient has arrived from abroad to satisfy the wants of the dealers. The continued large supplies from the continent, and the improvement which the growing crop has undergone since May, have combined to cause the oat trade to become exceedingly heavy. The depression has been more felt on the ordinary sorts than on fine corn; but the demand for all has been languid in the extreme. Until within the last ten days the arrivals of foreign oats were almost exclusively from the near continental ports; but latterly we have had a cargo or two from Russia; and though it is not likely that the receipts from thence will be so large as in former years, still a supply from St. Petersburg, Riga, and afterwards from Archangel, must be calculated on; and it seems that we shall manage to do very well without the accustomed assistance from Ireland. Just now the dealers manifest a decided objection to add to their stocks. In the beginning of the month the best qualities rather crept up in value, owing to their real scarcity; but lately even these have been influenced by the abundance of foreign. The difference in price since the end of May is quite 1s. per qr. in favour of the buyer on the finer descriptions, and 2s. on the common sorts.

Though the quantity of English beans brought forward has been very small, and the receipts of the article from abroad not particularly large, still quotations have given way. This has no doubt been occasioned by the fears of a failure of the crop, (which prevailed during the drought,) having been allayed; still no one expects a good yield of beans, and it is therefore thought that the retrograde movement will not continue. Egyptians have lately been offered at 23s. 6d. per qr. in granary, and might probably be had at 23s., being about 2s. per qr. cheaper than in May.

In peas very little business has been done; the supplies have, however, been so very insignificant as to lead holders to demand former terms, and good boilers have at no period been sold under 38s. to 40s., whilst for fine maples nearly as much money has been realized. The transactions in all descriptions of peas have been on a strictly retail scale; other articles suitable for feeding purposes having been procurable relatively lower.

During the first fortnight in June, an active demand was experienced, both here and at Liverpool, for Indian corn on Irish account, and very high prices were paid for floating cargoes. Subsequently a part of the advance was lost; still quotations are 2s. to 3s. per qr. higher than they were when we last addressed our readers. It is evident that Indian corn has become a favourite article of food with the poorer classes in Ireland; and that it will continue to be used largely, even when the first cause of its introduction—dearness of potatoes—shall have ceased. At some of the large consuming towns in Ireland, ten guineas per ton has been paid, and the reduction from that point had not, according to the most recent accounts, exceeded 10s. to 15s. per ton. At Liverpool, 37s. to 38s. per 480 lbs. was, during the excitement, paid for Galatz, and in our market 35s. to 36s. Now, however, there are offers here of cargoes to arrive, at 33s. per 480 lbs.

The advices from all parts of the north and east of Europe speak very favourably of the prospects for the next harvest; this is particularly the case in those countries bounded by the Baltic Sea or the districts from which the leading ports are supplied. A favourable summer, and the restoration of tranquillity abroad, might therefore be productive of very low prices. As yet, however, quota-

tions abroad are relatively higher than in this country; hence no immediate increase in the supplies are calculated on.

Letters from Danzig state that the water in the Vistula, which had for a long time been very low, having risen, a good many barges grain-laden had come down; which circumstance, and the dull reports from Great Britain, had occasioned prices of wheat to give way 2s. to 3s. per qr. The very finest qualities were then obtainable at 38s., and good parcels at 36s., whilst common sorts had been offered at 34s. per qr. free on board. The total quantity of wheat shipped from Danzig from the opening of the navigation up to the end of May had consisted of 4,000 lasts, and about 1,000 lasts were ready to be despatched, the principal impediment being the scarcity of British ships, and the high rates asked for freight, say 4s. 6d. per qr. for wheat to London and the east coast.

At the Lower Baltic ports the transactions appear to have been comparatively unimportant; and though stocks in warehouse were small, the general impression being that farmers were large holders, prices had tended downwards.

At Stettin, Rostock, Wismar, &c., very capital red, weighing from 61 up to 63lbs. per bush., might according to the latest accounts, have been bought and put on board at rates varying from 32s. to 34s. per qr. When, however, we add duty, freight, insurance, &c., to these prices, the total cost will be found to exceed the present value of such qualities of wheat in our markets. This is also the case in respect to quotations from Hamburg, where the best wheat has not hitherto been sold below 37s. to 39s. per qr. free on board; still purchases have from time to time been made there on British account, probably for the chance of higher rates hereafter.

From the Mediterranean we have nothing new to report of the slightest interest. Letters from Marseilles, of the 17th June, state that the crops were looking splendid all over the south of France, and that an early harvest was expected. Wheat had, nevertheless, maintained its price there steadily, equal to 42s. per qr. having been paid for Polish Odessa for local consumption.

From America we have advices of very recent dates, which are in so far interesting as they prove that our notions of the probable range of prices on the other side of the Atlantic have not proved correct. Instead of a fall, as everybody here anticipated, the value of flour had steadily risen, and at New York, on the 14th June, good qualities of western were worth 6 d. per brl.; shipments from thence to the British markets would therefore be attended by serious loss.

COMPARATIVE PRICES OF GRAIN.

	Shillings per Quarter. NEW.		OLD.	
WHEAT, Essex and Kent, white	49	to 56	51	to 57
Ditto red	45	50	49	52
Norfolk and Suffolk	44	48	—	—
Lincolnshire and Yorkshire	—	—	46	53
RYE	31	33	—	—
BARLEY .. Essex, Kent, Norfolk, and Suffolk .. com. Malting	30	32	—	—
BARLEY .. Essex, Kent, Norfolk, and Suffolk .. Distillers' & Grinding	25	30	—	—
BARLEY .. Essex, Kent, Norfolk, and Suffolk .. Chevalier	31	33	—	—
MALT .. Essex, Norfolk and Suffolk	—	—	55	58
Kingston, Ware, and town made	—	—	57	60
OATS .. Norfolk, Cambridgeshire, Lincolnshire, and Yorkshire, feed	—	—	18	21
Ditto, Poland and potato	—	—	21	24
Northumb., Berwick, & Scotch potato	—	—	23	26
Ditto, feed	—	—	21	23
Devon & West Country, feed or black	—	—	16	19
Dundalk, Newry, and Belfast, potato	—	—	21	23
Ditto, feed	—	—	19	22
Limerick, Sligo, and Westport, potato	—	—	20	23
Ditto, feed	—	—	19	22
Cork, Waterford, Dublin, Youghal, and Clonmel, black	—	—	15	19
Ditto, white	—	—	17	21
Galway	—	—	13	15
BEANS .. Ticks	32	34	40	42
Harrow and small	34	38	44	53
PEAS .. Boiling	37	38	—	—
Hog and grey	36	38	—	—
FLOUR .. Town made (per sack of 280 lbs.)	—	—	39	44
Norfolk and Suffolk, household (do.)	—	—	33	36

FOREIGN GRAIN.

	Shillings per Quarter. FREE.
WHEAT .. Dantzic and Konigsberg, finest high mixed white	50 to 57
Ditto, good mixed	48 52
Ditto, red mixed	44 46
Stettin and Rostock	48 51
Danish	44 48
Hamburgh and Pomeranian	46 50
Black Sea (nominal) hard to soft	37 42
Buck or Brank	31 33
INDIAN CORN	28 33
BARLEY .. Hamburgh, Dantzic, Konigsberg, and Riga	23 26
Ditto, Grinding	22 25
Danish, Mecklenberg, and Pomeranian	23 26
OATS .. Dutch, brew, & Poland, Friesland, & Groningen	21 25
Danish and Swedish	15 20
Russian	15 19
BEANS .. Tick	34 36
Small	42 45
Mediterranean	22 23
PEAS .. White boiling	37 38
TARES	30 35
FLOUR .. United States	22 27
Canadian	22 26
INDIAN CORN MEAL (per brl. of 196 lbs.)	12s. to 12s. 6d.
RYE FLOUR (per ton)	£6 0s. to £6 10s.

IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS.

WEEK ENDING:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.	Rye. s.	d.	Beans. s.	d.	Peas. s.	d.
May 13, 1848..	49	10	32	8	20	2	29	10	35	6	35	9
May 20, 1848..	48	4	32	7	20	4	29	2	36	3	35	9
May 27, 1848..	47	8	32	8	20	8	28	9	36	9	36	11
June 3, 1848..	48	1	31	8	21	0	30	8	37	10	38	0
June 10, 1848..	47	8	31	7	20	9	28	0	38	4	37	0
June 17, 1848..	46	10	30	10	20	8	31	7	37	8	38	0
Aggregate Average of the six weeks which regulates duty	48	1	32	0	20	7	29	8	37	1	36	11
Comparative Average same time last year	93	9	54	0	34	6	69	8	57	11	58	10
DUTIES	9	0	2	0	2	6	2	0	2	0	2	0

ACCOUNT SHEWING THE QUANTITIES OF GRAIN AND FLOUR IMPORTED INTO THE UNITED KINGDOM DURING THE MONTH ENDED 5TH JUNE, 1848, THE QUANTITIES ADMITTED FOR HOME CONSUMPTION DURING THE SAME MONTH, AND THE QUANTITIES REMAINING IN WAREHOUSE AT THE CLOSE THEREOF.

Species of Grain.	Quantity imported.	Quantity entered for consumption	Quantity remaining in warehouse.
	qrs. bush	qrs. bush	qrs. bush.
Wheat, from British Possessions	861 0	663 4	237 4
Barley, do.	—	—	—
Oats, do.	—	—	—
Peas, do.	0 1	0 1	—
Beans, do.	—	—	—
Maize or Indian Corn, do.	—	—	—
Wheat, foreign	143191 7	120810 3	56702 7
Barley, do.	72646 1	70048 1	3459 3
Oats, do.	35550 5	34058 7	3108 1
Rye	1250 0	1238 7	11 1
Peas, do.	6082 3	5336 7	2012 6
Beans, do.	43247 1	44047 5	7249 3
Maize or Indian Corn, do	129825 4	127310 0	3288 3
Buckwheat	52 0	52 0	—
	cwts. qrs. lbs.	cwts. qrs. lbs.	cwts. qrs. lbs.
Flour from British Possessions	10 2 0	223 1 12	—
Flour, foreign	4708 2 3	6875 1 20	4471 0 12

PRICES OF SEEDS.

BRITISH SEEDS.

Cloverseed, red 30s. to 40s.; fine, 43s. to 48s.; white, 30s. to 50s.
Cow Grass ..... 30s. to 52s.
Linseed (per qr.).. sowing 56s. to 60s.; crushing 42s. to 48s.
Linseed Cakes (per 1,000 of 3 lbs. each) £11 10s. to £12 10s.
Trefoil (per cwt.) ..... 15s. to 21s.
Rapeseed, new (per last) ..... £30 to £34
Ditto Cake (per ton) ..... £5 15s. to £6
Mustard (per bushel) white .... 6s. to 9s.; brown, 8s. to 10s.
Canary (per qr.) ..... 73s. to 75s.; fine, 75s. to 78s.
Tares, Spring, per bush. ..... 5s. 6d. to 6s. 6d.

FOREIGN SEEDS, &c.

Clover, red (duty 5s. per cwt.) per cwt. ..... 28s. to 37s.
Ditto, white (duty 5s. per cwt.) per cwt. ..... 22s. to 45s.
Linseed (per qr.) .. Baltic 42s. to 46s.; Odessa, 42s. to 46s.
Linseed Cake (per ton) ..... £8 to £9
Rape Cake (per ton) ..... £5 to £5 10s.
Carraway (per cwt.) ..... 35s. to 37s.; new, 37s. to 38s.
Coriander (per cwt.) ..... 16s. to 20s.
Hempseed (per qr.) ..... 35s. to 38s.

HOP MARKET.

BOROUGH, MONDAY, June 26.

There is no improvement to notice in our market, which continues very heavy, with a downward tendency as to prices, which remain nominally as last quoted; but so little business is passing that it is difficult to say what reduction would be submitted to by sellers were a purchaser to any extent to come forward.

HORTON AND HART.

POTATO MARKET.

SOUTHWARK WATERSIDE, JUNE 26.

The waterside trade is all but finished for this season, and in a manner anything but profitable to holders of old potatoes, of which there are more than there ought to be. We cannot quote prices, as they are nominal. Yorkshire Regents are selling from 40s. to 50s. per ton for which 180s. was refused a few weeks since. In closing our report for the season, we are happy to say that at present there is every prospect of a large crop of potatoes, as the breadth of land planted never was so large, and the accounts of the plant are very cheering.

WOOL MARKETS.

BRITISH WOOL.

LEEDS, JUNE 23.—Sales continue very flat in this branch of trade; prices are in a great measure nominal, and have a decided tendency downwards.

LIVERPOOL, JUNE 24.

SCOTCH.—There is still very little doing in Scotch, and prices are almost nominal, as it is difficult to say at what rates sales could be effected in any quantity.

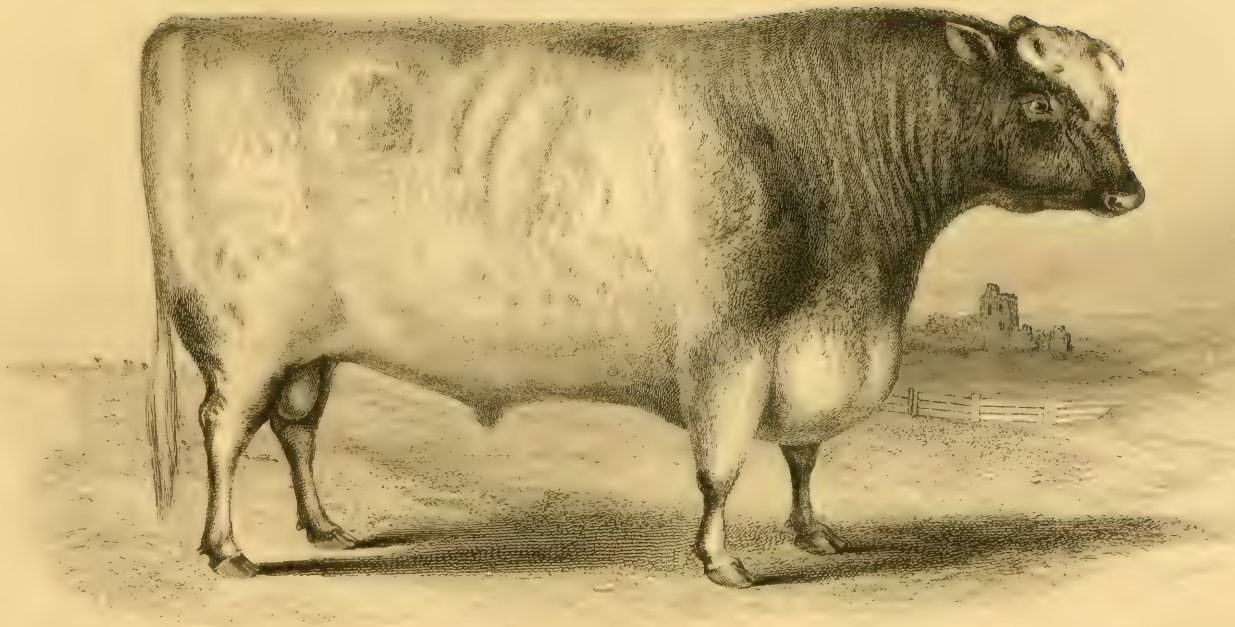
FOREIGN.—A fair business has been done in colonial and fine foreign at this place on the 20th and 21st inst., when about 3,000 bales were disposed of; but the prices are much below last sale. A quantity of low Wools were put up yesterday, but the biddings were so low that the greater part had to be withdrawn.

BERLIN, JUNE 23.—The Prussian wool fairs at Posen and Stettin, succeeding that of Breslau, have been still worse than the last mentioned. Posen offered about 6000 cwts. of wool, which for the greater part have been bought by Breslau dealers, at a reduction of 30 to 35 dollars per cwt. The Stettin fair commenced on the 15th inst. (three days before the fixed beginning) and was in two days ended. There the farmers, totally discouraged by the exit of the preceding Silesian fairs, and much impressed by exaggerated reports of recent troubles at Berlin, overhurried the sale of their produce, and accepted almost any bid, desirous of getting home as quickly as possible. Thus it came that nearly the whole quantity brought to market was rapidly sold at a reduction of 30 to 35 dollars per cwt., which, considering the ordinary middling price of the Pomeranian wools, is about 40 to 48 per cent. cheaper than last year. The English, being the chief buyers, purchased nearly 15,000 cwts. (about two thirds of the whole quantity offered for sale). The remainder has been partly sold to the coming spinners and inland speculators, partly disposed of to commissioners. After such precedents a further sinking of prices at Berlin was apprehended, as it could be expected to find there, as ordinary, the largest conveyances of wool; yet, to the general surprise, there arrived but a very small supply, many farmers having kept away from an untimely fear of troubles. The beginning of the market has been here likewise advanced by two days, and the principal business done on the 19th already, on which day the English and Hamburgh buyers took almost the whole quantity of wools offered in first hand. The diminution of price proved something less than at Stettin; yet the difference was nearly made up by the superior quality and wash of the Berlin wools. On the 20th and the following days the rest of the wools was taken out of the market, and much business done in the warehouses. Prices then became something better, and the reduction stopped at 20 to 28 dollars per cwt. There have been paid—

	Dollars per cwt.
For high-bred fleece wool	70 to 85
,, fine ,, ...	50 ,, 65
,, middle fine ,, ...	38 ,, 48
,, lower ,, ...	26 ,, 36
,, lambs' ,, ...	50 ,, 65
,, locks' ,, ...	25 ,, 28

Skin wool and slipes were much neglected; lambs in moderate demand. The quantity brought to market amounted to 25,000 cwts., which, added to an old stock of about 20,000 cwts., was in all 45,000 cwts.; therefore little more than half the ordinary quantity. There have been sold about 25,000 cwts, among which some lots of old wool. The English continued till the end of the fair to purchase largely; the Netherland, Belgian, and inland buyers made but a weak concurrence, and have done very little.—D. GUMBURG.

Printed by Joseph Rogerson, 21, Norfolk-street, Strand, London.



THE FARMER'S MAGAZINE.

AUGUST, 1848.

No. 2.—Vol. XVIII.] [Second Series.

PLATE I.

The subject of our first plate is the Short-Horned Bull "Baron of Ravensworth," was bred by Thomas Lax, Esq., Ravensworth, near Richmond, Yorkshire, exhibited at the meeting of the Royal Agricultural Society of England, held at Northampton, July, 1847, by Wm. Smith, Esq., West Rasen, Lincolnshire, and obtained the first prize of 20 sovs., in class 2, for the best Bull calved since the 1st Jan. 1845, and more than one year old; and was sold by that gentleman in September last for 300gs., to M. S. Stewart, Esq., Southwick, by Dumfries. By reference to "Coates's Herd Book," vol. 7., we find the following pedigree of this animal:—Baron of Ravensworth (7811), roan, calved Jan. 29, 1845, got by *Mehemet Ali (7227), d. (Cripple II.) by Bob (3181), g. d. by William IV. (5663), gr. g. d. by Cupid (938), gr. gr. g. d. by Satellite (1420), gr. gr. gr. g. d. (Faith) by Wellington (678), gr. gr. gr. gr. g. d. by Snowball (610), gr. gr. gr. gr. gr. g. d. by Sir Dimple (594), gr. gr. gr. gr. gr. gr. g. d. from the stock of Mr. Brown, of Aldborough.

* Mehemet Ali (7227) was the sire of Captain Shaftoe (6833), winner of the first prize of 50 sovs. in class 1 at the same meeting, also bred by Mr. Lax, and now in the possession of Mr. Smith, who won the first prize for the best yearling, at the recent show at York, with a heifer by the Baron of Ravensworth.

PLATE II.

VAN TROMP; Winner of the St. Leger, 1847.

Van Tromp, bred by Mr. Vansittart in 1844, was got by Lanercost, out of Barbell, by Sandbeck, her dam Darioletta, by Amadis, out of Selima, by Selim—Pot-8-o's—Editha, by Herod.

Lanercost, bred by Mr. Parkin in 1835, is by Liverpool, out of Otis, by Bustard. As in the case of Hetman Platoff, the world was beginning to judge him as a stud horse a little prematurely; though now, however, he ranks as one of the most fashionable stallions of the day. He had certainly the best of last season, there having been five-and-twenty winners out by him, including Van Tromp, War Eagle, Mr. Martin, The Swallow, Luminous, Crozier, and Ellerdale, the best mare of her year.

Barbelle, bred by Mr. Vansittart in 1836, had only one produce previous to throwing Van Tromp, a filly-foal by Muley Moloch, in 1842. She (the dam) was a tolerably good runner at three years old, and can claim the *gratis* sometimes allowed, either as a winner or dam of a winner.

Van Tromp is a dark brown horse, with no white about him, stands fifteen hands two inches and a half high, with a clean and rather small head, upright small ears, strong neck, good shoulders, great depth of girth, very muscular arms and knees, strong back and quarters, a little drooping towards the tail—which he carries close to him—very muscular thighs, good hocks, large bone and feet, and of a very quiet temper.

Summary of Van Tromp's Performances.—In 1846 he started three times, and won three—The Mersey stakes, at Liverpool, value clear £425; the Levant stakes, at Goodwood, £850; the Champagne stakes, at Doncaster, £1,075; he also received a Match forfeit of £50. In 1847 he started seven times, and won five—the North Derby stakes, at Newcastle-upon-Tyne, £470; the Gateshead or Lottery stakes, at Newcastle-upon-Tyne, £350; the St. Leger stakes, at Liverpool, £1,000; the St. Leger stakes, at Doncaster, £3,275; the Gascoigne stakes, at Doncaster, £150. In 1848 he has started twice and won twice.—The Great Four Years old stakes, at Goodwood, £3,600; the Goodwood Cup, £570.

THEORY AND PRACTICE OF BUDDING.

BY J. TOWERS, MEMBER R.A.S., H.S. OF LONDON.

Much has been written of budding in all its branches of application, but yet to little purpose, and this because one of the simplest of processes has been overlooked, or so perplexed with superfluous descriptions of processes, useless in themselves, that few book-taught practitioners can operate with any certainty of a satisfactory result.

July and August comprise the period wherein trees and shrubs attain a condition suitable to the operation, particularly if the weather be moist and showery; and for this reason the middle and latter end of the former month is most favourable in one respect, though for another, equally important, is less so than August. Let us then appeal to physiology in order to comprehend what that condition is to which allusion has just been made.

Every one acquainted with rural affairs is aware that grafting is usually practised by the orchardist in spring, with a view to gain a year's growth of the variety of apple, pear, cherry, or plum, which he introduces into a wild or inferior stock; and in nine cases out of ten apples and pears are propagated by grafting, because, if only common skill be employed, success is pretty certain, and a powerful shoot or two of strong wood attains perfect maturity before any severe frost approaches. But failure may result, and then budding offers an intermediate substitute for the graft, from which a good and healthy shoot may be obtained at the earliest period of spring developments. As to cherries and plums, buds, if well let into the mature but juicy shoots of the last spring, will bring a far better shoot in the following year than could a graft; and, in fact, the operation of grafting with them is at best very doubtful, unless performed by a person of great skill, thoroughly acquainted with physiological structure.

A bud, or eye, is a vitalized member, the germ and embryo organization of an entire system, capable of emitting roots, and to raising a stem with all the members thereto appending; by it, also, plants of the same species and varieties are perpetuated. A bud is generally seated at the base of a leaf-stalk, at the angle formed between it and the shoot. Each bud is attached to, and in close connection with, the young and yet perfectly formed bark of the present year, abounding with juices, and now, at the season described, particularly with that organizable *cambium*, or elaborated proper-juice, *succus proprius* (the *indusium*, or vital membrane, of the late Mr. Main.) The stock of any tree or shrub —as the peach, nectarine, apricot, plum, and cherry, among the fruit trees—and of the rose, of all kinds, *par excellence*, ought to be in the above condition; and so should the bud, or scion, which it is the intent, by inoculation, to introduce. Almost every plant that can be propagated by cuttings is raised into active growing life by the roots, which a bud, properly situated and protected, has the faculty to develop and project into the soil. But of all media that can be devised, none is so appropriate, so perfectly comformable to nature, as the young alburnous wood, moist with the vital juice, against which the eye and its shield of juicy bark can repose in perfect juxta-position, sustained thereon by a covering of bark raised from the stock, and a soft yet firm ligature around the entire space required by the operation.

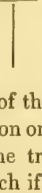
Dr. Lindley has correctly told us that "budding is usually performed in the months of July and August, because at that season the bark separates freely from the wood, and the young buds are fully formed; but whenever the too latter conditions can be satisfied, the operation can take place equally well. It must be observed, however, that the bud of one plant can only be made to grow upon the wood of another when both bud and stock are nearly related botanically." Apples will bud upon crabs, pears upon medlars and quinces, apricots and peaches upon each other and on plum-stocks. The relative position of a bud to be inserted has become a matter of question. In removing one with its bark from the wood on which it reposes, a small process will be seen to project on the latter, which evidently had been the channel connecting the eye with the medullary pith of the stock. Now it has been conjectured, that if the base of the bud to be inserted were made to rest upon this projecting point on the *wood of the stock*, which would be exposed by raising the bark just at the spot where a natural bud existed, the re-union of the new shield and its bud might be secured and expedited. Operators in general have not paid any attention to this mode of practice; but it certainly claims a trial.

In budding apple, pear, cherry, and plum trees, the season must depend upon the state of the barks; such buds seldom or never stir before the spring, and they are quite hardy, remaining perfectly secure and quiet till the usual season, when

they sprout at once with vigour and activity, frequently producing a fine branch the first year. But the rose is more arbitrary, for as its buds are liable to start very soon after insertion, a loss of the young wood is apt to be occasioned by the first sharp frost; and therefore the best budders prefer a late season, even the end of August, so as to secure the inactivity of the bud till the growing season of early spring. In every case, the branch of the stock above the place where the bud has been inserted is never cut back till the month of October.

I shall now extract a few lines of the directions ordinarily given in books, before I enter upon the detail of that improved simplified process, which, I presume, will insure success in three-fourths of the cases that terminate in failures when budding is attempted by the inexperienced amateur.

With a very sharp knife pare off a fully-formed bud, and the leaf at the axil of which it is seated, along with about half an inch of bark adhering at the upper end, and an inch or inch and-a-half at the lower end. Hold the leaf firmly between the finger and thumb of the left hand, with the cut side of the paring uppermost; then, commencing at the lower end, carefully disengage from the bark the small bit of alburnous wood that adheres to it, and with a jerk detach it from the paring, leaving nothing but the cellular centre of the bud adhering to the bark. Next, make in the branch or stem to be worked one incision transversely through the bark, and another downward perpendicular to it, commencing at the cross cut, and thus at right angles with it, so that the two represent the figure of a cross, thus



The thin ivory blade of the knife is then inserted to lift up the bark first on one side and then on the other, commencing at the transverse cut, so as to expose the wood; which if it appear moist with proper juice, gives proof that the stock is in a proper condition.

The shield and its bud, having been all the while held and kept moist between the lips, are pressed downwards under the overlapping edges of the raised bark, till the bud itself passes a little lower than the transverse line; after which a ligature of tough, soft, and wetted bass matting is passed round the parts under and over the bud—leaving *that*, however, free, but still pressed on every portion of the bark that was cut.

The first process thus effected is one of *pressure*, acting as a boy's leather sucker, by which air is excluded and perfect contact produced, and then—as one of our best physiologists observes—"if the operation be well performed, the bud will thus be fixed on a new plant in the same position it occupied on the branch from which it was taken"—excepting however that point of projection before alluded to, which united it with its original channel of pith; "the mouths of the medullary rays of its bark will unite with those of the wood of its stranger plant; it will be kept in contact with a continual supply of food oozing out of the alburnum on which it is placed, and it will absorb that food."

The great error committed in this general practice, when applied to rose-budding, is the adoption and perpetuation of the worse than useless "transverse" cut. It is supposed that by it a more ready access is given to the bud, which thus may be slipped down between the double lips thus expanded. Again, a pseudo-physiological reason for the practice is appealed to by its advocates, who, upon the plea that the descending sap of the stock acts upon the shield, direct that, so soon as it shall be safely inserted, a little portion of its bark be cut off square above the bud, and the new edge so formed be brought up by a gentle pull at the leaf stalk till it meet and press firmly and closely against the lower edge of the cross-cut. All this takes time, and to no purpose, but with the special disadvantage that, unless the utmost tenderness be exerted in making that cut, the alburnous wood of the shoot will be weakened, and rendered susceptible of injury from even a mederately forcible wind. Hitherto this season has been very windy, and almost every shoot so treated has snapped short off at the cut, to the almost certain loss of the bud.

This being the fact, and of which some of the best and most successful budders of standard rose-trees have become practically convinced, it only remains to recommend the more simple process by the single incision. Let us, for this purpose, imagine a case under the most favourable conditions. First, as to the stock: it shall be the wild or native rose, of which Smith's "English Flora" describes twenty-two species. Many of these are wholly unfitted by their habits for the purpose of the gardener, but some six or seven possess every property which can meet the object of the operator in adapting his garden varieties, whether these be weak and delicate or more robust growth. *Rosa canina* and *rosa systyla*, with their varieties, will leave nothing to be desiderated, without having recourse to the *Boursault* or other foreign stocks, which by some are recommended. As a general rule—though aware that it is in opposition to the opinion lately adduced in one of the periodicals—I lean to the theory that the bud of a *delicate rose should be inoculated in a stock of strong and vigorous growth*, and *vice versâ*. These principles admitted, select a stock which has three or four vigorous shoots

at the summit of an upright stem, four, five, or six feet high; collect as many buds as there are shoots to be worked—three are sufficient, and they ought to be all of one variety. Remove the wood as before directed; make one simple incision, commencing close as possible to the origin of a shoot where it is attached to the stem, and carry it on till long enough freely to admit the paring of the bark; then raise the bark on each side without tearing the upper part of the slit. Keep the incision sufficiently open to receive the shield, which insert tenderly and dexterously till every portion lie even against the moist alburnum of the stock; herein consists the skill of the budder. It is desirable that the insertion be effected quickly, and at once; yet if any part of the bark be not completely hidden and covered by that of the stock, no injury will result from gently passing the ivory haft of the knife between the two, so as to insure the correctness of position on the alburnum, upon which so much depends. Press with the fingers the exterior bark to make the junction compact, and then pass a ligature composed of six strands of strong woollen thread around the entire length of the cut, or even a little above and below it, with sufficient force to compress the barks effectually; but not so as to indent the stock, or to cause exusion of any juice. If the operation have been ably performed in the evening, and especially in moist weather, not one bud in a dozen need fail; and less than a week will suffice to verify this fact. When the bud appears fresh, and begins to swell, the ligature may be safely loosened; and at the fall of the leaf, or when growth is certainly torpid, the shoot budded may be cut back to the length of four or five inches. In the mean while secondary wild shoots and buds should be regularly removed. In the budding of fruit trees, the cross cut is not so injurious, because the fibre of their wood is tougher than that of the rose; but still it is quite useless.

THE TURNIP PLANT.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

It was an early observation of the enlightened Lincolnshire turnip growers, that the nutritive properties of this invaluable root varied in some degree with its mode of cultivation. Soon after the general introduction of crushed bones into that county as a drill manure, they were for instance led to remark that the turnips grown by its aid were rather more nutritious than those produced by the dung of the farm-yard. Recent valuable chemical researches have tended to the conclusion that this fact does not rest upon the mere vague conclusions of the shepherd; but that the composition of both the entirely organic portion of the turnip, and its mineral portion, differs very materially according to the natural soil on which it is produced, or the artificial food or manure with which it is supplied. It is true that in this case, as in all others where agricultural chemistry is concerned, extreme caution is necessary in avoiding hasty conclusions. But still we must regard it as a considerable step in advance of our chemical knowledge to find, as Mr. Lawes remarks (*Jour. R. A. S.*, vol. 8, p. 550), 'That within a certain range, which indeed is wider than has generally been supposed, the organic composition of the turnip bears a very direct relation to that of the manures by which it is grown." In another part of his valuable paper, he gives the proportion of nitrogen found in the dry matter of turnip bulbs, the produce of different manures; from this we find the following results (the quantity of manure applied being per acre):—

With 12 tons of farm manure	1.56
Ditto top dressed with salts of ammonia	2.54
8 cwts. rape cake	2.23
Ditto, and also top dressed with rape cake	2.79
Ditto, and salts of ammonia	2.80
Ditto, and also top dressed with rape cake and salts of ammonia	3.0

The different composition of the turnip bulb grown with dung and with guano, was some time since shown by Professor Johnston (*Johnson and Shaw's Farmers' Almanac*, vol. 2, p. 15). He found in 100 parts of the fresh turnip grown with

	Dung.	Guano.
Water	88.02	87.93
Pectic acid	1.24	0.71
Gum	0.27	0.19
Sugar	5.37	1.64
Extractive matter	8.00	6.77
Oil	0.25	0.16
Cellular matter	1.22	1.81
Salts	0.68	0.70

These results are chiefly valuable as indicating to the farmer a path of practical observation and enquiry, very likely to lead to the best results in the economical feeding of live stock. It was from this conviction that I was induced on a recent occasion to remark in another place (*Bell's Messenger*, No. 2702)—The chemical composition of any plant seems to be always the most safe foundation on which we can rely, in our search for the manures best adapted to promote its profitable growth, since it seems evident that the substances of which the plant exhausts the soil would, by their presence in

any proposed substance, tend to render its application to such a soil a fertilizing addition. Several specimens of turnip have been recently analyzed by Professor Way (*Journal Royal. Ag. Soc.*, vol. 8, p. 178). He found that 100 parts of Skirving's Swede turnip yielded 0.75 of ash, Dale's hybrid 1.09, the green-topped white 0.592. In 100 parts of these ashes were found—

	Skirving's Swede.	Dale's hybrid.	Grn. top white.
Silica	2.69	2.75	0.96
Phosphoric acid	9.31	8.77	7.65
Sulphuric acid	16.13	11.71	12.86
Carbonic acid	10.74	12.66	14.82
Lime	11.84	6.46	6.73
Magnesia	3.28	2.51	2.26
Peroxide of iron	0.47	0.14	0.66
Potash	23.70	36.93	48.56
Soda	14.75	8.01	—
Common salt	7.05	10.00	5.44

From this table, as the Professor remarks, we may learn that there is a certain and somewhat close resemblance between the composition of the ash, or mineral substances, of one turnip bulb and another. The quantity of phosphoric acid is seen to be tolerably constant, and the alkalies together make up very nearly the same amount. He found also (and the farmer will do well to note this fact) that the leaves of turnips contain much more common salt than the bulbs. The quantity, he tells us, is considerable in some cases; in one specimen (Dale's Hybrid, grown by Mr. Huxtable, on a chalk soil), it amounted to 11½ lb. in a ton, or about nine ounces in every hundredweight of the green tops. "May not this circumstance," he argues, "in part, explain the action of turnip tops in causing purging in sheep when they are first turned upon this food from pastures?" The other alkaline salts (such as the phosphate of soda or tasteless salt, phosphate of potash, and the alkaline oxalates and tartrates, which are known as purgatives) exist largely in turnip tops. This difference in the mineral composition of the bulb and the leaf of the turnip is curious and instructive. From the mean of 24 analyses of 100 parts of ash from the Norfolk white turnip leaf, by Mr. Campbell, and 24 of the ash from the turnip bulb of the same variety, by Dr. Gilbert (ibid, p. 558), we obtain the following results:—

	Leaf Ash.	Bulb Ash.
Potash	22.05	44.84
Chloride of potassium	4.84	0.34
Soda	0.19	1.79
Common salt	6.15	6.86
Lime	30.53	11.40
Magnesia	0.82	1.46
Phosphoric acid	5.05	7.89
Sulphuric acid	12.55	10.63
Carbonic acid	17.82½	14.79

The salts of lime seem of all others to be those the most extensively present in the ashes of the turnip; the phosphate and the sulphate appear to be always present in very considerable proportions, and the farmer will not fail to remember that all the artificial manures, which are remarkable for their beneficial action on the growth of the turnip, contain the phosphate of lime, as a material ingredient. It has been found indeed, by various practical farmers, that the addition of crushed bones, or bones in combination with sulphuric acid, to the manure of the farm-yard, materially increases its powers. Mr. E. Wagstaffe, of Mesterton, near Huntley, tells us (ibid, p. 225) that until the year 1844, he generally manured with 20 loads of farm-yard dung and 8 bushels of bones to the Scotch acre. In 1844, however (and I give the detail here, because it will afford practical and seasonable hints to many of my agricultural readers), instead of the eight bushels of bones put into the drills along with the dung at sowing time, he adopted the following plan:—He used for every Scotch acre (6150 square yards) 20 loads of dung, 63 lb. of sulphuric acid, and 126 lb. of bones, "either dust or mixed drill." He says, "I procured a few old treacle or oil casks, and put them by the side of the dung heap, but 19 gallons (189 lb.) of water into one of the tubs, and to that 63 lbs. of vitriol; to this mixture I put 126 lbs. of bones. One man or two must be employed to let the bones very slowly out of a sack, another stirring the contents as the bones fall in, as fast as he can, with an implement like what they mash malt with in brewing. Let this mixture stand two or three days, if a week so much the better, stirring it every day. Then add water to it, till you think you have as much as 20 loads of dung will contain without its running away to waste. Turn the dung over into a well-shaped heap (or midden), and when turning it, to every layer of turned dung throw on this diluted liquid, with cogs or pails. Shape up the midden neatly, and put on a good covering of earth all over it—rather more than the usual covering." By this plan he calculated that he affected a saving per acre of 9s. 5d., and he adds, "in every instance in 1844-5 and 6, my turnips have been declared by good judges to be a guinea an acre better raised by the new way than by the old, and the crops following the new process, particularly grass, have been earlier and better than those following the old. "In 1846," he continues, "I was rather short of dung, and took off five loads of dung per Scottish acre, and added 104 lbs. (2¾ bushels) of bones, and 52 lb. of vitriol—and with this change, which was an additional saving, the turnips maintained their superiority over the old way to the full extent."

The old way—20 loads of dung at 3s. 6d., and 8 bushels of bones at 3s.				£4	14 0
New way in 1846—15 loads of dung, at 3s. 6d.	£2	12	6		
230 lbs. of bones, at 3s.	0	15	0	3	19 0
115 lbs. of vitriol, at 1d.	0	11	6		
Saving per acre				0	15 0

We may here pause to remark, that one very considerable expense in this addition to the farm-yard manure is for the bones. It is hence that the use of the pulverised fossil phosphate of lime, instead of the crushed bones, is a still more economical agent, whenever it can be procured on the spot in sufficient quantities. Of the composition of this native phosphate in several varieties in which it is available by the English farmer, Mr. J. C. Nesbit has recently given a valuable report (*Mark Lane Express*, No. 851). The following table gives not only the proportion of phosphate of lime which each eariety contains per cent., but also the amount of it which is equal to 100 parts of bones :—

	Phosphate of Lime.	Amount equal to 100 parts of Bones.
Fossil bone, from Cromer, in Norfolk	45.50	99
Fossil bone of a whale, from the same place	39.39	114
Fossil bone from amongst the coprolites of Fetixstow, in Suffolk	43.42	103
Coprolite from the Suffolk craig	45.76	98
Coprolite from Suffolk	53.50	84

Even the shelly craig of Suffolk contains a proportion of the phosphate of lime, as do the shell marls of various other English districts. Mr. Nesbit found per cent. of phosphate of lime in

The craig specimen, No. 1	1.10
— 2	0.78
— 3	0.74
— 4	0.93
— 5	0.91
— 6	0.52
— 7	0.47
Oyster bed, Colwell Cay, Isle of Wight	0.91
Freshwater limestone, Alum Bay	2.21
Coast of shells, Bognor	0.21
Freshwater shell marl, Alum Bay, Isle of Wight	0.48
Shark's Tooth, Isle of Sheppy	19.50

Such are some of the sources from whence the phosphate of lime, so advantageous in its effects upon the turnip crop, can be procured by the farmer. The observations of Mr. Lawes, however, are pretty near the truth when he tells us, that "it must be clearly understood that the bulk of an agricultural crop of turnips depends materially upon the amount of organic matter contained in the soil, without which the development of the power of growth, by means of the phosphate, will be unavailing. The first application of a mineral phosphate is liable to produce heavier crops of turnips than those which follow, unless the carbonaceous matter taken from the soil by the turnips, and lost by the respiration of the stock consuming them, has been made up by imported cattle food. Rape cake, as containing a large amount of organic matter, is an admirable manure for the turnip. As a substitute for farm-yard dung, it may be employed in conjunction with the superphosphate of lime, the former being sown broadcast, and the latter drilled with the seed. Peruvian guano, which contains a large quantity of ammonia, as well as phosphates, is found to be a much more certain manure for turnips in Scotland, where the fall of rain is large, than in those parts of England where it is much less. Indeed, the natural agencies of *season* are much more favourable to the growth of turnips in Scotland, and the west and north of England, than in the eastern counties, where the application of skill and capital upon a soil well suited to the plant has gained for them a high reputation. In the south of England, and wherever the comparatively small amount of rain renders the production of the turnip uncertain, the cultivation of the mangold-wurtzel might be extended with considerable advantage. It can be sown sufficiently early in the spring to enable it to extend its roots deep in the soil before the dry weather sets in, it is not liable to injury from insects, and it is capable of producing a larger amount of solid food than any other crop in a rotation."

Researches such as these will, in the hands of the accomplished English farmer, be conducive to new and still more valuable advances in the cultivation of not only the turnip, but of all other root crops. They will, however, in thus availing themselves of the chemist's aid, carefully guard against theorizing and substituting mere words as an explanation of unknown facts. By the first path they will be led to rest their practice on an increasingly solid foundation; by the last they will be certain to follow a merely chance-directed system of cultivation.

DEODORIZING FLUIDS.

Sir,—Your publication of this date contains a letter, signed "William Glass," to which we trust you will in justice permit us, in the absence of Mr. Ellerman, to reply.

Before proceeding to discuss the contents of the letter to which we allude, we will take the liberty of stating who the writer is, as much for the purpose of enlightening the great majority of your readers, who must hitherto have been wholly ignorant of the existence of such a person among scientific authorities, as in order to throw light upon the true motive of his letter, and thereby cause his statements to be estimated at their actual value.

This Mr. Glass, the ostensible object of whose letter, and the self-designation appended to it, are designed to impress your readers with the supposition that he is a highly-disinterested and by no means contemptible authority in matters of chemistry, and more esperially the particular subject of which he treats, occupies a subordinate post in the service of Sir William Burnett, whose commercial interest it is to decry our superior deodorizing fluid, in order to promote the sale of his costly solution of chloride of zinc.

Why Sir William Burnett has chosen to thrust forward this person to sustain his rivalry, instead of openly writing for himself (if, indeed, Mr. Glass has not thrust himself forward, from a desire to recommend himself to his master, or a mere ambition to see himself in print), it is not, perhaps, our province to determine. At all events, we can only speculate upon the question. It may be that Sir William Burnett shrewdly calculated upon the probability that Mr. Glass's scientific pretensions and connection with himself might escape exposure; or it may be that Sir William's better breeding and sense of honour recoiled from the personal impertinences and misrepresentations which it has been thought necessary to infuse into Mr. Glass's letter. From Sir William Burnett's distinguished position, and, from aught we know to the contrary, of his general character and bearing, we unfeignedly trust that, if either of these motives influenced him, it was the latter.

Without the slightest ceremony Mr. Glass calls upon your readers to believe that none of the really eminent chemists who have analyzed, experimented with, and testified, respecting our fluid, know anything about it but himself, and that none of them speak the truth but himself. Dr. Ure and Mr. Scanlan (of whose scientific reputation and unimpeachable veracity it would be superfluous in us to say one word to your readers) have repeatedly and formally certified (as Mr. Glass admits) that they have carefully analyzed and tested our fluid. But Mr. Glass flatly declares that he does not believe they have done so. Dr. Ure and Mr. Scanlan have further emphatically certified that our fluid, unlike Sir W. Burnett's in this respect, possesses no poisonous properties. But Mr. Glass unhesitatingly affirms that it does possess them. Whether in the case of testimony thus conflicting your readers will give preference to the responsible assurances of such gentlemen as Dr. Ure and Mr. Scanlan, or the interested statements of Sir W. Burnett's servant, cannot for a moment form a question in our minds.

Mr. Glass declares that he has analyzed samples of fluids obtained from us or our agents; and it may be that he has done so, to the best of his ability. When, however, he gravely asserts that he finds "arsenic" present in them, and that too "in no inconsiderable proportion," we scarcely know whether most to admire his skill or his veracity. The former we know to be extremely superficial (so much so, indeed, that on a recent occasion he confounded manganese with zinc in an alleged analysis wherein he co-operated); but of the latter we will, in courtesy, refrain from saying anything beyond affording your readers an opportunity of judging for themselves by a few examples from his letter.

First Example.—Mr. Glass states that Mr. Ellerman's assertion that the commissioners of sewers had discontinued using Sir W. Burnett's fluid "is not the fact;" that, on the contrary, "it had never been discontinued;" whereas Mr. Ellerman's statement rests on information furnished at the Sewers-office, and subsequently confirmed by the personal assurance of the commisioners' chairman, Viscount Morpeth, whose unimpeachable veracity cannot, we confidently apprehend, be shaken by the mere allegations of Mr. Glass, even though the latter may, in the self-assurance of their author at least, be deemed sufficiently weighty to substantiate assertions of falsehood against such more humble gentlemen as Dr. Ure, Mr. Scanlan, and Mr. Ellerman. It is certainly possible, although we had not previously learned thus much, that the commisioners may have temporarily *resumed* the use of Sir William Burnett's fluid in their

operations upon cesspools, for the purpose of consuming the remainder of their stock of it; and to this circumstance, irrespective of the dangerous properties of the fluid, we can offer no objection. But this will not suffice to vindicate Mr. Glass's veracity in the allegation that they had *never* discontinued it; and we feel too much confidence in the regard of the commissioners for due economy and impartiality in the distribution of the public funds to believe that they contemplate continuing their resumed use of Sir William Burnett's fluid beyond this limit, whilst our more powerful and innocuous deodorizer is tendered to them at a price many hundreds per cent. lower, and whilst most respectable manufacturing chemists in the city have offered them chloride of zinc itself, of precisely the same quality as Sir W. Burnett's, at less than one fifth of the price he originally charged them, and one half the sum he subsequently took great credit to himself for having consented to reduce his charge to. Besides, the mere fact that the monopoly and the monopoly price bestowed upon Sir W. Burnett by certain of the commissioners' officers, prior to the interference which caused the discontinuance in question, forming at this moment a subject of proceedings in the House of Commons, is sufficient to assure us that the commissioners would not venture to act otherwise than as we have conjectured, even if they were capable, under different circumstances, of the jobbing Mr. Glass would ascribe to them.

Second Example.—Mr. Glass avers that Sir W. Burnett's fluid has given "the greatest satisfaction" in all the districts wherein it has been employed by the commissioners; whereas, on the contrary, its extensively injurious effects in Westminster were, not long since, made the subject of serious complaint in the House of Commons by three highly-respectable members, viz., Sir H. Willoughby, Sir C. Burrell, and Mr. Frewen; and numerous individuals from other parts of the metropolis, wherein the commissioners' operations with it have been carried on, are constantly applying to us for our fluid to remove the nuisance occasioned by Sir W. Burnett's, of which they complain bitterly, stating that the ill effects arising from its application greatly exceed those previously experienced from the cesspools it had been used to purify.

Third Example.—Mr. Glass states that among the samples of our fluid he professes to have anylyzed was one recently reported upon as inodorous; whereas the sole vessel containing the sample referred to remains unopened in our possession, and not a drop of it can possibly have passed into his hands.

These three examples, together with that involved in the testimony of Dr. Ure and Mr. Scanlan, which Mr. Glass so unceremoniously presumes to contradict, will, we trust, afford your readers a sufficient criterion of the degree of reliance due to Mr. Glass's testimony in point of veracity.

We will not further trespass upon your valuable space by condescending to criticise or complain of the remarkable good taste and politeness Mr. Glass exhibits in casting unqualified imputations of ignorance upon Mr. Ellerman. The impertinently affected desire to "inform" Mr. Ellerman of the composition of his own fluids, with which Mr. Glass does not hesitate to assert he (Mr. Ellerman) "is entirely unacquainted," &c. &c., are beneath comment. We will, therefore, close our observations with a few additional remarks respecting the assertion that our fluid is "of so poisonous a character," and a word or to concerning the endeavour to make it appear that "the protosalts of iron are very injurious to vegetation."

Mr. Glass avers that he finds, in all the samples of our fluid that he has analyzed, chlorides of iron, manganese, zinc, and *arsenic;* and we should not have felt surprised, from the wide range he embraces respecting its ingredients, if he had enumerated gold, jewels, and all sorts of precious substances, had it not been that he might therein have feared he would procure us customers from among the multitude who pursue wealth more eagerly than health. Without venturing to say that in isolated cases a minute quantity of manganese, copper, or zinc might not, possibly, by accident, become introduced in manufacturing a solution of which peroxide of iron is the principal base, we deem it sufficient to refer to the obvious improbability of our making it a practice to introduce metals so much more costly than iron as copper and zinc, in a preparation sold at so low a sum as our fluid, and the fact that the presence of a small portion of manganese, if it were so, could not be injurious. With respect to "arsenic," however, the case is different. That iron pyrites in a raw state contain a portion of arsenic is well known; but that, when the stones are burned (as in the manufacture of our fluid), the arsenic is so sublimed that it cannot be present in any appreciable quantity is equally well known. Moreover, it is a somewhat singular and peculiarly significant fact that, since Mr. Glass states he as found arsenic present "in no inconsiderable proportion," he does not vouchsafe to inform your readers of the exact proportion. Surely, as an accurate, or would be accurate, analyst and chemical authority, he should or could have found no difficulty in affording precise information in preference to dealing in mere vague general terms, if his statement were really

founded on positive and reliable experiment! We can only add, that we will fearlessly undertake to swallow all the arsenic Mr. Glass can produce from a ton of our fluid, and allow him to spoil this quantity in pursuit of it; and, if he believes himself correct upon the subject, he must needs recognise this as a much more prompt and effectual mode of overcoming his employer's rivals than his utmost efforts with mere pen and ink. Supposing, however, for mere argument's sake, that arsenic were present in our fluid, we think that even Mr. Glass must admit that a reason for the national adoption of our brown acerb-tasted fluid is found in the impossibility of its being criminally, or by accident, used as a poison; whilst the colourless, scentless and non-nauseous fluid of Sir William Burnett may be readily swallowed, through design or accident, so as to lead to fatal results. Indeed, a very disagreeable accident which befel Sir E. Owen, from merely tasting of water purified (?) by means of Sir William Burnett's fluid, was lately related in the House of Commons.

In treating of the effects of our fluid upon vegetation, Mr. Glass assumes that it consists of the protosalts of iron. This is not true. It chiefly consists of the perchloride, the protochloride being crystallized from it. But, even assuming the protosalt to be also present, what are the facts as affecting vegetation? Almost all lands contain a mixture of the protoxide and peroxide of iron; and one main use of breaking up and pulverizing the soil by the plough, &c., is to complete the oxidation of the iron, and make it a powerful absorbent of ammonia from the atmosphere, and a good fertilizer, as Liebig has long since demonstrated. We therefore feel indebted to Mr. Glass for the opportunity of pointing the attention of agriculturists to the improvement which night-soil and manures in general derive from being deodorized by means of our fluid, more especially for chalky and other lands deficient in iron oxide, in which the calcarious matter present in all cultivated soils will convert our perchloride and peracetate of iron into peroxide. Can Mr. Glass say as much in favour of Sir William Burnett's chloride, or other preparations of zinc, which have certainly no beneficial operation on agriculture, but have, on the contrary, always been considered pernicious to plants? The "arsenic," too (were such really present in our fluid), could not injure vegetation, inasmuch as it is well known that farmers are in the habit of steeping their seeds in it, one druggist in Hull alone selling upwards of two tons per annum in small packets over his counter for this purpose at particular seasons.

In conclusion, sir, it is consolatory to us to perceive that even Mr. Glass's zeal to serve his employer has some limit; even he does not venture to dispute M. Ledoyen's confirmation of Dr. Ure and Mr. Scanlan, by denying that Sir William Burnett's fluid is poisonous. Even his assurance does not extend thus far; and he his compelled to content himself with a forlorn attempt to make it appear that our fluid is also poisonous. We hope, however, that when next Sir William Burnett puts forward, or permits the volunteering of, a champion to assail Mr. Ellerman's superior claims, he will let him be a person more courteous, more scrupulous, and withal more scientific, than Mr. "William Glass."

We are, sir, your obedient servants,

ELLERMAN AND CO.

St. Martin's-lane, London, July 1, 1848.

—Pharmaceutical Times.

BOUSSINGAULT'S EXPERIMENTS WITH SALT.

Few men deserve more hearty thanks at the hands of farmers, for unwearied researches into agricultural questions, than Boussingault; and any one, who has himself tried agricultural experiments, will be able to form some idea of the labour required when they are carried on for months or even years, as he has done. He is also peculiarly fitted for the investigation, both by his scientific attainments, and such a measure of worldly goods, as enable him to carry on his researches without that strict regard to profit incumbent on ordinary farmers. It has been stated that he carries on an experimental farm in the south of France; sparing neither time nor trouble in the investigation of disputed points bearing on practical farming. For many months past, he has been trying the effect which salt produced on the fattening powers of cattle, and also on the quantity of milk obtained from cows. In the latter case the cows were fed on hay, one receiving a small quantity of salt, and the other none; and after *carefully measuring* the milk and *weighing* the hay consumed, Boussingault comes to the decided conclusion that salt in this case neither increased the yield of milk nor diminished the consumption of hay. Negative results are as valuable to a farmer as positive ones; and though it is possible that with other food, as turnips or brewers' grains, some benefit might be produced by the use of salt, the above experiment would seem to render the common practice of mixing salt with the

hay (as far as milk cows are concerned) of little more than problematical benefit.

In addition to the above, Boussingault some months ago laid before the French Academy of Sciences an account of two series of experiments he undertook, for the purpose of determining the effect which salt produced on the fattening powers of horned cattle; in the one case one half of the animals experimented on received daily a portion of salt with a *weighed out* quantity of food; in the other case they were given salt along with an unlimited quantity of food. In both cases, not the slightest benefit could be seen when the weight of the cattle was compared with those which had received no salt.

Still further to test the value of salt when mixed with the food of cattle, a third experiment was tried. In this case, one half of a lot of young cattle were deprived altogether of salt for 13 months, in order to ascertain the effect its continued want might produce on their health. We give the result in the experimenters own words—"These researches, like those which have already been published, show that salt is far from exercising the influence on the growth of cattle, or on the production of flesh, which is generally attributed to it. Any trifling variation which may be seen in the result, so far from weakening this conclusion, only strengthens it.

There was in the end, however, one result produced by the absence of the salt which deserves notice. Both lots of cattle felt the same to the touch, but after the experiment had lasted about six months, lot No. 2 (without salt) began to have a very coarse, staring coat, whilst No. 1 (with salt) was beautiful and glossy. Indeed, there seemed to be a partial change in the nature of the animals: as the experiment proceeded, lot No. 2 lost their hair in spots, seemed dull and heavy, and *generally of a lower temperature* than lot No. 1, which were exceedingly active and sprightly, "and would undoubtedly have brought a higher price in the market than the others." It is to be regretted that Boussingault found himself compelled to part with the animals at this stage of the experiment, for we have here obtained a singular fact, viz., that though salt produces no more weight of flesh, it evidently influences the general health of young cattle. As the animals experimented on were at the conclusion three years old, it is likely that they would have been fed off the next season: it would have been interesting to have known the final result of the use of salt when the cattle were brought to the butcher.

NEWCASTLE FARMERS' CLUB.

At the Monthly Meeting held July 1st, 1848, Mr. Stephenson, of Throckley, in the Chair,

Mr. William Glover, the Secretary, rose and said, that the subject for discussion, as the members were aware, was, "*The Importance and Profitableness of Poultry;*" and he had the honour of introducing it by reading a paper by a farmer's wife, whose name he was not allowed to mention, and who must therefore be suffered to remain incog. The paper (of which he was sure the club would unanimously say the lady had no need to be ashamed) was as follows:—

"I have been induced to bring this subject before the notice of your club, knowing that several of the members hold very erroneous opinions as to the importance of poultry as a branch of commerce, and their value as farm produce. I am also anxious to defend my order from the stigma that has been cast upon us by a member of the Royal Agricultural Society, who, I am told, objects to improving or even the keeping of poultry, as he says "they only offer an inducement to the farmers' wives to rob their husbands," meaning, I presume, that we take from the granary corn which would realize more money if sent to market, than it does when given to the poultry. I shall endeavour to show you that, far from robbing our husbands, we add considerably to their incomes, although they begrudge every particle of food given to the poultry on the plea that they "do not pay;" and, no doubt, the usual price received for the lean and inferior fowls brought to the Newcastle market is far from remunerative; but if a systematic plan of rearing and feeding be adopted, proper houses and yards be provided, poultry may be made a valuable part of the produce of a farm: they always find a ready market, and are produced at little cost.

"I should like to see half the encouragement that is bestowed upon flowers bestowed upon poultry. We see at the horticultural shows, ten pounds, and gold medals awarded to the producer of a flower, which merely gratifies the eye-sight; while scarcely any is offered for poultry, which not only gratify the eye-sight by the beauty of their plumage, but are useful as food, a luxury to our appetites, and profitable to the keeper. 'If people,' says M. Reaumur, 'are affected with a kind of pleasure so transitory to the most enthusiastic

florists, who procure it but for a few days by a world of care and toil continued through a whole year, if they are affected by the variety and fine combination of colours in their favourite flowers, the poultry yard, when well managed, may be made to offer them endless pleasures of the same description. The cocks, even of the commonest breeds, when exposed to the play of the sun's rays, exhibit the brightest colours; and with the glossy brilliancy beauty, and varied mixture, we are the more struck in proportion to our minute observation of them. The hens, on the other hand, if the breeds have been select, are even no less worthy of admiration: some, for instance, have spots distributed with great regularity, and so brightly white as to look silvery; others are speckled with a fine golden colour; and the domestic fowls offer a multitude of colours, the shades of which would be found with difficulty, if they were sought for among the birds of the woods or waters.

"Poultry repay, as I shall afterwards show, for the keep, leave a large profit in the hands of the producer and dealer, and yet a sufficient supply for the consumption of our market is not raised throughout this country. The fact can only be accounted for by the prevalence of ignorance as to their profitableness, or why are we indebted to France, Holland, and Ireland, for more than half of the poultry and eggs we consume every day? I have no doubt that many persons may regard this subject as too insignificant a branch of farming stock to deserve attention, or occupy the time of the members of this society. The contrary of this will be at once seen, when I state that the value of the fowls consumed in London, alone, it is estimated, amounts to upwards of £100,000 annually. The value of fowls exported from Ireland in 1846 amounted to half a million of money. In 1847, it was estimated that the value of the eggs exported from the same country amounted to nearly one million sterling. In one year they exported nearly £50,000 worth of feathers. Some years ago the number of eggs exported from Berwick to London was estimated at £30,000 a year. The little market town of Selby, in Yorkshire, exports annually £5,000 of poultry and eggs. Macculloch, in speaking of eggs, tells us that "vast quantities are brought from the country to London and other great towns. Since the peace they have also been very largely imported from the continent. At this moment, indeed, the trade in eggs forms a considerable branch of our commerce with France, and affords constant employment for a number of small vessels." The following is an account of the quantity of foreign eggs entered for home consumption during the three years ending with 1842, and the produce of the duties on the same:—

QUANTITIES.

1840. Number.	1841. Number.	1842. Number.
96,410,108	96,944,327	89,347,833

DUTIES.

£ s. d.	£ s. d.	£ s. d.
34,450 8 0	33,524 8 9	32,519 9 7

France supplies, at an average, above 80,000,000 of this immense importation, the rest being principally brought from Belgium. Now, supposing the eggs supplied by the former to cost, at an average, 4d. per dozen, it follows that the people of the metropolis and Brighton (for it is into these that they are almost all imported) pay the French about £111,111 a year for eggs; and supposing the freight, importers and retailers' profit, duty, &c., raises their price to the consumer to 10d. a dozen, their total cost will be £277,777. There were, during the last year, 43,739 eggs imported from the continent to Newcastle. It is estimated that, annually, there are about 40,000 chickens, worth £3,500, consumed in Newcastle, and 2,600,000 eggs, worth nearly £6,000; so that the people of Newcastle pay £9,500 a year for eggs and chickens, independent of geese, ducks, and turkeys. From the above-mentioned statement you will see the importance of poultry as a branch of commerce.

"I shall, as I am addressing 'practical men' give you one or two 'practical' statements respecting its profitableness as a branch of farm produce. On the farm from which I write, the poultry consists of 60 hens, principally of the Dorking breed (but I intend crossing them with the Cochin China), 6 ducks, and we generally buy from 70 to 80 geese in the autumn. The produce sold in 1847 was as follows:—

	£ s. d.
3400 Eggs, at 5s. 6d. per (long) hundred	8 2 11
208 Chickens at 1s. 9d. each	18 4 0
Eggs and chickens consumed at home	4 15 0
60 Geese, at 5s. 6d. each	11 10 0
10 Ditto consumed at home	2 15 0
20 Ducks, at 2s. 6d. each	2 10 0
	47 16 11

OUTLAY.	£ s. d.	
Barley, milk, meal, and small corn	6 4 1	
Woman's wages and market expenses	4 12 7	
70 Geese, at 2s. 6d.	8 15 0	
		19 11 8
Profit		£28 5 3

In 1845, we realized a profit of £21 5s. 7d.; in 1846, £29. We consider our profit small, in comparison with the number of fowls we keep, and we feel confident that if we had suitable houses and yards, we could realize a much greater profit than we at present do; but, unfortunately, we have only the

ordinary poultry house, such as is seen in this district; and we cannot prevail upon our landlord to erect us such as we want, although we have offered him a per centage. I have received the following statements from a lady, to whom I tender my most cordial thanks for the assistance she has rendered me. She says: 'We have about fifty hens of different kinds, none of the best, or our profits ought to be much larger, also ten ducks; they are fed upon small corn, which is only suitable for poultry or pigs; we do not breed any for sale, merely for our own use.

	£	s.	d.
The amount received for eggs during the last year was	16	10	0
Cost of food, at 2s. per week	5	4	0
Profit	£11	6	0

One turkey hen ought to bring up, upon an average, ten young ones at the first hatching, and six or seven afterwards; they are rather troublesome when young, and require a great deal of attention; the early ones will sell for 5s. each, and the others for about 3s. 6d. each, being much smaller. We generally buy about 100 geese in September, which we sell in about two months at the average price of 5s. each, the cost price being about 3s each, which leaves a very good profit.' Again, another lady says: 'I should think we have about 40 hens. They are of no particular breed, just the common barn-door fowls. Some, I believe, are from the Duke of Northumberland's breed: they are grey and brown mottled, very large, and excellent layers. We have five or six ducks, and two turkey hens, which are very dark, nearly black. They brought up, last Spring, twenty-four young ones. We had only about thirty chickens last year, which has rather thrown us back. We brought in 37 geese at 3s. 6d. each, in the Autumn, and sold them again in a very short time, at 5s. 9d., 5s. 6d., and 5s. 4d. each. We do not get the highest price for eggs, as we generally send them by the carrier to the market. The turkey eggs, in the latter part of the summer, we generally sell for 1d. each. Our proceeds were as follows:—

	£	s.	d.
From Eggs	9	16	11
" Chickens	1	4	10
" Ducks	0	18	6
" Turkeys	4	17	9
" Geese	10	5	5
	27	3	5
OUTLAY.			
30 Geese	6	9	6
Oatmeal and woman's wages	3	0	0
	9	9	6
Profit	£17	13	11

The profits are not so very small, but they would have been more had we succeeded better. I should say, for such a number as we have, the profits, upon an average, should be about twenty or twenty-two pounds per annum.' In 'Baxter's Farmers' Library' there is a statement of what can be realized from poultry. The individual, from whom the statement was obtained, keeps only five fowls, which include one cock. The expense of keeping, with produce of eggs, together with the profit for two separate years, were as follows:—

1830	£	s.	d.
4 bushels of barley	0	16	6
2 " sharps	0	5	1
½ " bran	0	0	5½
½ " pollard	0	0	7
	1	2	7½
Number of eggs 710, at 1d. each	2	19	2
Clear profit	£1	16	6½

1831	£	s.	d.
2½ bushels of barley	0	11	0
9½ gallons of sharps	0	3	6½
7 " pollard	0	0	9
4 " bran	0	0	6
	0	15	9½
Number of eggs 549, at 1d. each	2	9	6
Clear profit	£1	13	8½

Or nearly eight shillings and ninepence farthing in the year for each hen.

"Mr. England, in the 4th volume of the 'Prize Essays of the Highland Society,' gives the following statement of the expense and profit derived from a poultry establishment, consisting of five wards, each containing 24 hens and 1 cock:—

	£	s.	d
Expense of building one ward	9	10	0
Live stock, consisting of 1 cock and 24 hens, at 2s. 6d. a pair	3	2	6
	12	12	6
Total expense of 5 wards	63	2	6

The produce will be as follows (deducting the time of breeding and moulting, one hen will lay 144, or 12 dozen eggs, annually):—

	£	s.	d.
7½ dozen, at 6d. per dozen	0	3	9
The remainder hatched, of which 3½ dozen produced chickens, which sold at 6d. per pair	0	9	9
One dozen full-grown fowls, at 2s. 6d. per pair	1	10	0
	2	3	6
This sum multiplied by 24	51	12	0
Again multiplied by 5	258	0	0

OUTLAY.	£	s.	d.			
Henwife's house rent	1	10	0			
Milk, meal, and wages	12	10	0			
Interest of £63 2s. 6d.	3	1	0			
Amelioration and repairs.....	2	0	0			
Grain for five wards, 15 quarters, at 24s.	18	0	0			
				37	1	0
Total profit				£220	19	0

"Cobbett, in his 'Cottage Economy,' says that 'six fowls, with proper care, might be made to clear, every week, the price of one gallon of flour,' which at the present price of flour, will amount to rather more than 8¼d. per week, or £1 19s. 7d. per year. I could have given you many other 'facts,' further proving the profitableness of poultry, but I think that I have brought forward sufficient to prove my case. However, I shall, before concluding this part of my subject, relate one instance that has just been told me. A farmer, who for six years rented a small farm, on which he had by industry increased his original capital, had a larger farm offered to him, which he took. Afterwards, when he came to make his calculations, he found that he had not sufficient capital to properly stock (an error into which our 'gude men' too often fall); he would, in all probability, have been compelled to give it up, had not his sister, who had kept his house, come forward and made him a present of £250, the amount she had saved from the proceeds of her poultry.

"In order to accomplish any amelioration in the improvement of poultry, so as to make the keeping of it profitable, it is essential that we have a superior breed, in place of the mixed and mongrel breeds usually kept on our farms; and, in the next place, we should have suitable houses and yards for their accomodation, (for which, by the by, as there is a great talk that landlords should be paid a per centage for all permanent improvements, we would willingly pay a per centage on the cost of erecting proper poultry houses,) I therefore shall briefly describe such a poultry house as I would wish to see upon every farm. It should be placed in a warm and dry situation, sloping towards the front, with an aspect such as will receive the greatest possible daily average of sunshine; it should be built of brick or stone, not wood, and divided into separate wards, so as to hold not more than 24 hens, with a separate nest for each hen, as without this precaution the same nest will frequently have 3 or 4 visitors. The best kind of nest is made of wood. I object to wicker baskets, as they are calculated to let in cold air. Every poultry house should be provided with a sufficient quantity of small sand; or, if such cannot be procured, clean ashes are a good substitute, pieces of chalk are also useful: for when fowls are kept deprived of sand or chalk, a considerable per centage of their eggs will be laid soft, *i. e.*, destitute of a perfect shell. There ought to be attached to the house a well-drained yard, divided into as many portions as it contains wards, with water in each, inclosed by a wall or paling, but not a hedge, or the fowls will get through, and will be troublesome in laying their eggs in the hedge; each portion should be flagged and covered for feeding the fowls in: part covered with sand or fine gravel for them to wallow in, part laid with turf that the fowls may find insects and earthworms, and eat grass when they feel inclined. In the erection of poultry houses, ventilation ought to be particularly attended to, as it is highly essential: for where numerous creatures congregate and remain shut up for many hours, an unhealthy heat will be generated, and a bad effluvia from the manure will stagnate, and create disorders which would never exist among poultry if free ventilation and cleanliness abounded in the house.

"It will not be uninteresting, before describing the different breeds, to make a few observations on the Cantelonian system of hatching eggs. A machine (which you can see in operation at the Polytechnic Exhibition, at present open at Newcastle) in which fowls are produced in 95 days fit for market, at a cost of 8d., and weighing 2¼ lbs. 'Eggs,' says a writer, in reviewing Mr. Cantelo's pamphlet, 'may now be classed as a sort of seed, or plant. The fecundity of domestic poultry is immense, and 75 per cent. of chickens can be got from their eggs.' Before this was known, had any one attempted to send his poultry to market at 95 days old, he would most certainly have extirpated his stock. Now, we are told by Mr. Cantelo, of thousands being got at a hatch instead of tens, and eighteen broods a year instead of two; of 73,000 fowls a year being produced by one small concern, and of having 20,000 always on hand, from which he selects 200 for market every day, and they are all kept by his system in constant good condition, in luxury, ease, cleanliness, and warmth as long as they live. Out of 480,000 farms, it is estimated that there are not sent to market more than nine or ten million heads of poultry in a year, to supply the whole population of the United Kingdom, shipping and all, which is not more than one-third of a fowl to each person once a year; were every one to have a fowl as part food once a month, it would require 326,000,000 more fowls than are at present produced. This plan is certainly one of the most feasible that has been brought out for hatching eggs; as the invention becomes more known, we must expect to see it fairly tested, for it is an important question to all interested in rearing poultry.

"It would be needless to give a description of all the breeds of poultry; I, therefore, shall very briefly describe such as I consider best suited to the farmer.

"The *Dorking breed*, so called from a town in Surrey. No fowls are equal to the Dorking for the table, which are the new Normandy fowls of the gourmand. They are a plump-bodied, whitefleshed fowl, feed rapidly, and grow to a large size when properly managed. It is quite a mistake to suppose that the characteristic of the Dorking is their having uniformly five toes: the production of two toes instead of one is merely accidental, like that of two thumbs sometimes observed on the hand of an individual of the human race. The colours are variable, but white is the most prevalent, and many esteem a white colour to be essential to the genuinenees of the breed.

"The *Malay* is a breed of a large size. This size, however, consists rather in limb than body; and as it thus produces a quantity of offal rather than available flesh, it is not to be regarded as a good bird, although the hen lays a very large egg, which is very rich—in fact, two are equal to three of an ordinary fowl; but, unfortunately, they are bad sitters. The colours of the feathers are black, or a very dark brown, streaked with yellow. The finest Malay cock that I have seen in this country, was exhibited, and gained the first prize, at the recent poultry show. It is said that a cross between the Malay and the common fowl produces a breed very superior to either of their progenitors. A cross has been tried between the Dorking and the Malay, but has not proved successful.

"The *Cochin China*, the prince of domesticated birds, is generally of a bright bay colour, darker above, with a black mark, of a horse-shoe shape, upon the breast; wings borne tightly up; bearing erect and lively; whole form approaching to that of the Bustard; comb and wattles large and simple. The hens (some of them weighing from 8 lbs. to 10 lbs.) are famous layers, repeatedly laying two and three eggs per day. A well-known poultry fancier, in writing to a friend, strongly recommends a cross between this breed and the Dorking as being extremely profitable.

"The *Spanish* are majestic birds; they are known by their jet black colour, large toothed comb, and wattles, white cheek or earpiece: they are a very good breed for keeping, not only possessing flesh of the best and whitest quality, and acquiring it very rapidly, but they are also good layers.

"The *Common Dung-hill breed*. Colours are various. It is of the middle size, and, as a well-known writer says, just as much out of place in the farm-yard as the cur dog would be in the kennel of a sportsman; and I hope the time will soon arrive when its place will be occupied by birds calculated to prove profitable. As I am afraid that I have trespassed too long upon your time, I shall not attempt to give a description of such breeds as the bantams, game fowls, and shackbags, which are perfectly useless to the farmer.

"*Turkeys* are very difficult to rear; in fact, I never could rear them to be profitable. But when any are kept, I certainly would recommend the black or Norfolk turkey, it is hardy and less difficult to rear; it also attains a larger size at an earlier period than either the white or copper-coloured. *Geese* ought only to be reared by farmers in the neighbourhood of commons, or such places as Prestwick Carr; although some farmers rear them on good grazing land, having an absurd notion that they preserve the health of the cattle in the pastures in which they feed, which is altogether erroneous; they are foul, and injure a great quantity of grass near their haunts, and should, therefore, never be allowed upon good grazing or meadow land. The plan is to purchase them from the poor land farmer, after harvest, and feed them off on the stubbles. *Ducks*.—I would advise you to abandon all fancy breeds, and adhere to the Aylesbury, or large English white duck, or a cross between them and the Rouen or French duck, which make a very valuable breed.

"I cannot conclude this paper without tendering my thanks to those gentlemen who were at the trouble of arranging the last poultry show, held in Newcastle—a show that I would wish to see amalgamated with your useful and well-organized society. When we see such shows supported by our most gracious and beloved Queen, by the National Agricultural Societies of Scotland and Ireland, and by the Royal Zoological Society of London, it certainly would throw no discredit upon the Newcastle-upon-Tyne Farmers' Club to support such a show. The inferior quality and bad condition of the poultry sent to the Newcastle market has long been a subject of complaint. But I trust that the recent exhibition will be the means of introducing better breeds into the district. Such shows are exceedingly interesting, and also productive of much good, for they are not only the means of causing a spirit of emulation among my own order, but they create a desire among the cottagers to possess good breeds of poultry. I trust and sincerely hope ere long, instead of possessing such poor miserable mongrel-bred birds as they now have, to see them in possession of such noble breeds as the Cochin China, the Dorking, and the Spanish; for how many a poor cottager's wife do we know who, by the sale of the eggs of her fowls, and her chickens,

might be able to procure some additional comfort to her lonely cot!"

The CHAIRMAN said he would be happy to hear any remarks which the members might have to offer.

Mr. GLOVER admitted that he was one of those who had doubted the advantage of keeping fowls on a farm, but he was convinced by this paper of his error. It seemed to him that the rearing of poultry, like the fattening of cattle, demanded greater attention—in this district particularly. He must say that he never saw anywhere such a miserable show of poultry as in the Newcastle market.

Mr. WEEKS would have been glad if the lady had told them a little more about the rearing and feeding of poultry. It was easy enough to hatch them: the rearing was more difficult. The paper spoke of improved breeds; but he doubted whether they would be better layers than the ordinary kind, if so good. He had taken much interest in the egg-hatching machine at the Polytechnic Exhibition. It had not, however, made great progress; nor did the chickens seem to thrive very well. One of them, indeed, he believed, had died that morning. But the ducks got on pretty well. With regard to Dorking fowls, he believed that the pure birds had all five claws: those which had not five must have been crossed.

Mr. C. ARUNDALE said he had just now a hen with sixteen chickens. She had set herself with eighteen eggs, and was rearing sixteen chickens. He fed her with boiled barley and a little pollard. He agreed with Mr. Weeks that the true Dorking had five claws; and yet he had seen chickens from Dorkings with less than five, under circumstances which seemed to preclude crossing. The great art of keeping Dorkings was to change the male bird every year. If this were neglected the breed would be sure to deteriorate. It was so with everything—birds, pigs, cattle, everything.

The CHAIRMAN said he had heard the paper with much pleasure; it did the writer great credit. The lady clearly showed that considerable profit might be realized by poultry. Mrs. Stephenson usually had from 60 to 70, and he sometimes told her he thought she had too few. He thought it no robbery that his grain went to feed fowls, but often fed them himself. After seeing the poultry shows in Newcastle, he had spoken to Mrs. Stephenson about improved breeds; but she told him she got about forty eggs a day from her hens, and doubted if the improved breeds would prove so productive.

Mr. ARUNDALE: The Dorkings are decidedly better layers.

The CHAIRMAN resumed:—The paper showed a good profit—more than one half. Some farmers might say they never saw the profit; but if it did not come to them one way, it would another. The good wife would want less pocket money.

Mr. W. KELL said he had much pleasure in moving a vote of thanks to the writer of the paper. It was exceedingly interesting and very important. He might say of poultry, as of any other stock, that if it were worth while breeding at all, it was worth breeding the best of its kind. With regard to Cantelo's machine, it removed one great difficulty which stood in the way of the improvement of breeds; for although it was inconvenient to bring the birds themselves from a distance, the eggs were easily transmitted; and the machine hatched them as infallibly as the hen. He had the gratification of moving a vote of thanks to the lady for her excellent paper.

Mr. REDHEAD seconded the motion; which was put from the chair, and carried by acclamation. The meeting then broke up.

[It is due to Mr. Cantelo to state, that the experiments made with his machine at the Polytechnic Exhibition have fully borne out the claims of its ingenious inventor. It was not to be expected that the Polytechnic Committee, with all the other demands public and private, which press upon their time and attention, should produce and rear such a multitude of chickens as the machine is capable of throwing upon the market. Enough that they have gratified the curiosity of the public, and shown what the machine may do in mercantile hands.]

THE POTATO DISEASE.

Though some of your correspondents treat Dr. Klotzch's opinion of the potato disease rather slightingly, it so far agrees with that of many of the most celebrated chemists of the present day as to be worthy of attention. It is obviously of very little importance to the public generally whether the *aphis vastator* and *fungi* found in diseased potatoes be the cause or the effect of the disease, the object directly interesting to them is to prevent any such ravages in future. It must, however, be evident that every attempt to discover a cure, until the cause be known, can but be labour in the dark.

Liebig, in his recent work "On the Motion of the Juices," points out the ill effect which a continued exposure to an atmosphere either greatly deficient in moisture or over-charged with it will have on the health of man and other animals. He also quotes an opinion of Hales, to the effect that the blight and fire-blast in hops arise from one of the above deranged states of the atmosphere; and he further states that the potato disease has probably a similar origin. "The cause of this disease is precisely the same which in spring and autumn excites influenza; that is, the disease is the effect of the temperature and hygrometric state of the atmosphere, by which, in consequence of the disturbance of the natural evaporation, a check is suddenly given to the motion of the fluids, which is one condition of life, and which thus becomes insufficient for the purpose of health, or even hurtful to the individual. The fungi which have been observed on the potato plants, and the putrefaction of the tuber, are not the signs of a disease, but the consequences of the death of the plant."

After a rather learned disquisition on the difference between an annual and a perennial plant, Dr. Klotzch says that "the potato plant requires more care than is usually devoted to it. Hitherto the whole cultivation consisted in clearing off the weeds and hoeing up the earth round the stem. Both of these measures are indeed necessary, but they are not alone sufficient; for the plant is cultivated, not on account of its fruit, but for the sake of its tubers; and our treatment should be modified accordingly. The chief points to be attended to with a view to the attainment of the object, namely, the increase of the tubers, are, 1st., To increase the power in the roots; and 2nd., To check the transformation which occurs in the leaf." He says "Both these ends may be obtained simultaneously, if in the fifth, sixth, and seventh weeks after setting the tubers, we pinch off the extreme points of the twigs to the extent of half an inch downwards, and repeat this on every branch or twig in the tenth and eleventh week, no matter at what time of the day."

Dr. Klotzch asserts that the above simple plan is not only efficacious against the disease, but that it also improves both the quantity and quality of the crop. It is now under course of trial in Prussia, and should it be successful for three years he is to receive £300 from the government of that country. There is every probability that it will succeed, because Dr. Klotzch has evidently studied the subject, and recommends the remedy as a legitimate inference from the information he has obtained.

It would not be sufficiently interesting to the general reader to give the various steps by which Dr. Klotzch has arrived at his present position; but we would particularly direct attention to his advice as well worthy of a trial, wherever there is any fear of a recurrence of the misfortune, which has so seriously injured all the civilized world.

In addition to Dr. Klotzch, two other eminent men, a Professor Harting and Professor Martius, have during the last year directed their attention to this important subject. Neither of the latter appears to have observed any animal life in the early stage of the diseased potatoes; and Professor Harting states that fungi are never visible at the commencement, and sometimes are wholly absent during the whole progress of the malady. These fungi are not capable of being spread by infection, says Harting, though Von Martius succeeded in doing so. Both of these observers agree that the disease is not to be ascribed to insects. During the early stages of the disease nothing is to be seen either of them or their larvæ; they usually appear about the same time as the fungi. Professor Harting, led on by these facts, sought to find in the temperature of the air and earth the cause of this disease, and, like Liebig and Klotzch, he has gathered together some very remarkable facts which bear out what we have already stated—that it is to atmospheric causes alone that we are to attribute this extraordinary malady. Von Martius describes two distinct kinds of disease, the dry canker and the scabby disease. The above facts deserve to be extensively known, as they seem evidently to be a step in the right direction, and, if properly followed out, may reasonably be expected to enable us to arrive at the truth.

It is true such an evil as we suffered under in 1845 and 1846 may occur only at long intervals of years; but the fact of its occurrence will be a warning to the nations not to place their sole dependence on a single crop. Unhappy Ireland and the north of Scotland are mournful examples of this mistake.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

"Hence he to fields descends, manures the soil;
Instructs the ploughman, and rewards his toil;
An useful work, when peace and plenty reign,
And Art joins Nature to improve the plain."

Nearly eleven years have passed away since the propriety of establishing a national society for the improvement of agriculture was first broached by the late lamented Earl Spencer, whose name will ever be held in grateful remembrance by the yeomanry of England. The Royal Agricultural Society of England was founded in 1838, after many attempts had been made, and many suggestions thrown out by some of the leading farmers in England, as to the probable value of such a society to the advancement of practical agriculture. The first person who systematically addressed himself to the question was Wm. Shaw, Esq., of London. From the year 1834 to the period of the first public meeting of the society, Mr. Shaw, on every proper occasion, not only suggested the public advantage likely to be derived from such a society, but he excited the Duke of Richmond, Lord Spencer, Mr. Handley, and other great leading agriculturists, to propose its immediate formation. The first public expression by these great friends to agriculture of their willingness to co-operate in the promotion of a national agricultural society, similar in its objects to the prosperous Highland Society of Scotland, was made at the dinner of the members of the Smithfield Club, on the 11th of December, 1837, when Earl Spencer was the first to allude to the subject in a speech, in which he dwelt not only upon the advantages which would arise to agriculture from the exertions of a national society, but alluded to the great principles to which such an institution must adhere, such as the careful avoidance of political discussions, and all interference with themes which might be likely to become the subject of legislative enactments—principles which have been since ingrafted into the charter, rules, and bye-laws of the society. The feeling thus publicly expressed was immediately and warmly responded to by the Duke of Richmond, Mr. Handley, Mr. E. Wilmot, and others; and so clearly expressed was the desire of all the members of the Smithfield Club then assembled in favour of the proposition, when Earl Spencer thus first briefly alluded to the subject, that immediate steps were taken to effect the formation of such a society. In the month of March, 1838, therefore, an advertisement appeared in the public papers, furnishing in its list of subscribers the names of those who must, in conjunction with Mr. Shaw, be regarded as the founders of the society. The following names were attached to the announcement:—Duke of Richmond; Duke of Wellington; Earl Fitzwilliam; Earl Spencer; Earl of Chichester; Earl of Ripon; Earl Stradbroke; Lord Portman; Hon. R. Clive, M.P.; Hon. B. Baring, M.P.; Sir James Graham, Bart., M.P.; Sir F. Lawley, Bart., M.P.; John Bowes, Esq., M.P.; E. Buller, Esq., M.P.; R. A. Christopher, Esq., M.P.; H. Blanshard, Esq.; W. T. Copeland, Esq.; J. W. Childers, Esq., M.P.; Ralph Etwall, Esq., M.P.; H. Handley, Esq., M.P.; C. S. Lefevre, Esq., M.P.; Walter Long, Esq., M.P.; Wm. Miles, Esq., M.P.; Joseph Neeld, Esq., M.P.; E. W. W. Pendarves, Esq.; Philip Pusey, Esq., M.P.; E. A. Sandford, Esq., M.P.; R. A. Slaney, Esq., M.P.; J. A. Smith, Esq., M.P.; R. G. Townley, Esq., M.P.; W. Whitbread, Esq.; and Henry Wilson, Esq. The project was well received, the meeting was well attended by a great number of influential noblemen and gentlemen connected with agriculture, and the Agricultural Society of England commenced its career under auspices of the most satisfactory and encouraging character, no less than 250 noblemen and gentlemen connected with agriculture at once enrolling their names as members. Earl Spencer was soon after elected the society's first president, and Mr. Shaw its secretary, an office which he resigned in 1839, when the present able secretary, Jas. Hudson, Esq., was elected. We may truly say that the anticipations of the originators of the society have been more than realized. "The little one has become a thousand." The society held its first meeting in July, 1839, at Oxford, when the Quadrangle of Queen's College was fitted up as a pavilion for the grand dinner, which was attended by about 2,500 individuals. At the subsequent meeting, at Cambridge, in 1840, the number of members had increased to about 4,000; and in the same year the society received a royal charter of incorporation. In 1841 the society held its annual meeting at Liverpool, when its members had increased to 5,382; and the following year the meeting was held at Bristol, when the number was augmented to 6,500. Derby was the next place selected by the council for their annual gathering, which was held in that town in 1843; and there the local advantages and peculiar situation of the town combined with the many facilities for the transmission of stock and implements to render it the largest meeting which had been held, and to increase the number to about 7,000. This number was augmented at Southampton in 1844; while at Shrewsbury, in 1845, in spite of the total want of railway communication, and the consequent inconvenience and difficulty of transit, many new members were enrolled. The meeting at Newcastle-upon-Tyne, in 1846, was the eighth which the society had held, and was equal, as a whole, to any of its predecessors. At the meeting at Northampton last year no change took place either as regards the energy displayed by the members and active supporters of the society, the numbers and excellence of the

stock and implements exhibited, the appreciation by influential bodies of the importance of its objects, or the desire of the public at large to benefit by the opportunity afforded them of examining and inquiring into the merits of the animals of various breeds, and the application and utility of the machines and implements exhibited. Last, but not least, is the splendid meeting at York, to have been present at which will be one of the pleasantest reminiscences in the history of the thousands whom it has drawn together from every part of the country—a result which must be attributed to the central position of the town, the peculiar local advantages, and the insurpassable facilities afforded for the transmission of stock, implements, and visitors, to and from almost every place in the kingdom.

The Royal Agricultural Society of England consists of an indefinite number of governors and members, who have the free power and privilege of electing at each anniversary meeting a council, formed of one president, twelve trustees, twelve vice-presidents, and fifty other members, regulated in their proceedings by bye-laws from time to time enacted, and to whose care the entire management of the society is intrusted; such president and council reporting at two general meetings in each year the state of affairs and progress of the objects of the society. We find from the report of the council in May last that during the preceding half year 139 new members had been elected; 31 having died, and 82 having been struck off. The society then consisted of 93 life governors, 186 governors, 648 life members, 5,387 members, and 21 honorary members; making a total of 6,335—which number has, we believe, since been materially augmented.

We append a list of the honorary members.

Honorary Members.—His Imperial Highness the Archduke John of Austria; the Very Rev. William Buckland, D.D., Dean of Westminster; Captain J. Stanley Carr, Duchy of Lauenburg; Henry Colman, Agricultural Commissioner of the State of Massachusetts; Charles Daubeny, M.D., Professor of Rural Economy, University of Oxford; Sir Henry Thomas de la Beche, Director of the Ordnance Geological Survey; the Hon. Edward Everett, President of Cambridge University, U.S.; Dr. George Fownes, Professor of Practical Chemistry, University College, London; Thomas Graham, Professor of Chemistry, University College, London; the Rev. J. S. Henslow, Professor of Botany, University of Cambridge; Dr. Hofman, Professor of Chemistry, Royal College of Chemistry, London; James F. W. Johnston, Reader in Chemistry, University of Durham; Baron Liebig, University of Giessen; Sir Roderick I. Murchison, K.S.P., President of the Royal Geographical Society; Dr. Lyon Playfair, Chemist to the Ordnance; Edward Solly, Professor of Chemistry, Horticultural Society, and Addiscombe College; Dr. Charles Sprengel, Secretary to the Pomeranian Agricultural Society; the Hon. Andrew Stevenson, Washington; M. Sylvian Van de Weyer, Belgian Minister; John Thomas Way, Consulting Chemist to the Royal Agricultural Society of England.

If it be asked how is it that this institution has obtained such a position—such a rank among the great societies of the world, we refer to the principles upon which it was formed, to its constitution, and to its devotion to practical agricultural facts. Its constitution is based upon liberty of opinion to the fullest extent; liberty, controlled by order—liberty, regulated by virtue. The next great polar star is the determination that its study shall be confined to practical facts—a determination supported by and dependant upon patience and long continuance, without which improvement is unattainable. And lastly, calling to its aid truthfulness, and guiding itself by the principle of submission to the will of God, it repudiates all humbug and clap-trap, and requires to know not only of the successes but also of the failures of its members. The seclusion from the discussions of the society of all topics of a political tendency, or having reference to questions pending or about to be brought forward in either House of Parliament, is another ingredient in its constitution, which has been undeviatingly recognised from its original establishment; and this political and legislative neutrality has been made a permanent condition by the terms of Her Majesty's Royal Charter, granted in March, 1840.

THE YORK MEETING.

"Many a happy day has risen and set
To me within that city's circling zone
Of grey embattl'd walls; each ancient mark
Those monuments and reliques of old time,
Intelligible legends of the past,
A double interest own; for there are writ
Stories of olden days, and there the heart
Its own associations has inscribed
In lines which fancy's eye alone can trace."

It having been determined that the annual meeting of the Royal Society should be held in Yorkshire in the present year, the cities of York and Ripon, and the boroughs of Leeds, Sheffield, Doncaster, and Richmond were speedily among the places which took steps for affording accommodation and for inviting the society.

The meeting of the Council of the Society to determine the place of exhibition for 1848, was held in May of last year. The Duke of Richmond occupied the chair on that occasion, and after reports had been received from the committee appointed to visit the several towns and report upon the accommodation which was offered, a full consideration was given to the claims of each place, and the Council then decided by a large majority (something like 20 to 10 as between York and Leeds) to hold their meeting in the City of York, which was represented by a deputation consisting of the then Lord Mayor (Geo. Hudson, Esq., M.P.) H. R. Yorke, Esq., M.P., Sir John Simpson, Mr. Ald. Richardson, Jas. Richardson, Esq. (the present Lord Mayor), and the then Town Clerk, R. Davies, Esq. To these gentlemen, and particularly to Mr. Hudson, the city is indebted for the energetic efforts which they made to induce the society to select York as the place of exhibition; and thus render it a focus from which was diffused around all those benefits and advantages which the Royal Agricultural Society of England is so well capable of imparting. To the citizens of York the importance of securing the meeting in that city was no doubt great in many respects. The outlay at each annual exhibition from the influx of visitors, &c., has been estimated at from £20,000 to £30,000. But there are other important advantages resulting from such a visit, which have a far more extensive operation. The advancement of agricultural science, and the stimulus given to agricultural operations in every district where the society has held its meeting, have been apparent in an eminent degree. Let us give a simple illustration of this. Among the practical good results of the Newcastle meeting of the society, one occurred from a casual circumstance which furnished the farmers of that neighbourhood with a striking and tangible proof of the advantages of draining, a fact which has been communicated by Mr. Ramsay, a member of the society, who felt a deep interest in the progress and success of that country meeting. By the requirements of the society it was necessary that the site of the show-yard on the town-moor at Newcastle (as at York this time) should be drained sufficiently to prevent any inconvenience for the purposes of the exhibition should the weather at the time of holding the meeting have proved unfavourable and much rain have

fallen. Well, the area of common so drained (although not perhaps in the most complete manner according to the experience gained at the present day), remained a lasting instance of the striking effects produced by that drainage. The steward of the Herbage Committee, as well as many of the freemen, signified to Mr. Ramsay their entire conviction of the beneficial effects of drainage, in consequence of the decided superiority of the grass on the drained portion over that on the remaining undrained portion of the town-moor. Moreover, as an instance of the results attending the draining of a stiff soil, this casual circumstance wrought a very favourable change in the opinions of many of the farmers in the neighbourhood.

FIRST DAY.—TUESDAY, JULY 11, 1848.

The society commenced the business of the meeting by opening the implement yard for public inspection at 8 o'clock on Tuesday morning. The yard was situated on the Bootham-stray, a level plain, about one mile to the north of York, near the point where the Helmsley-road and the Scarborough Railway intersect. The department of the yard occupied by cattle was that nearest to York, and that occupied by implements the farthest from it. The whole structure was in the form of a square, and covered 22 acres of ground. It was enclosed within a substantial boarding about 10 feet high, above which were seen the white canvass roofs of the sheds, and running in parallel lines from east to west. The proximity of the railway gave the society great facilities for getting the cattle and implements quietly and easily into the yard. To the west of the yard, and on the opposite side of the road by which it was approached from the city, were the tents of the horticultural and floricultural show, rising at the centre into a huge pavilion. The yard of the society and the tents had the appearance of two great encampments.

STEWARDS' DEPARTMENT.

Mr. Shelley.—Trial Fields; including ploughs, skim and other ploughs, harrows, scarifiers, drills, dibbles, manure depositors, clod crushers, rollers, cultivators, horse hoes, haymaking machines, horse rakes, pulverisers, and other field implements.

Col. Challoner.—Steam engines, steaming apparatus, tile machines, thrashing machines, and draining tools.

Mr. W. Shaw, Jun.—Barn machines, chaff cutters, churns, crushers and mills, corn dressing machines, turnip cutters, weighing machines, carts, waggons, and all other miscellaneous articles, such as fences, fire engines, pumps, wheels, &c., &c., and all other unclassified articles.

JUDGES' DEPARTMENT.

Messrs. Outhwaite and Hesseltine.—Ploughs, skim ploughs, scarifiers, harrows, clod crushers, horse hoes, pulverizers &c., hay-making machines, horse rakes.

Messrs. Paget and Wallis.—Drills, dibbles, manure depositors, tile machines and tools, grinding mills.

Messrs. Love and Lister.—Thrashing machines, dressing machines, barn works, including chaff cutters, corn dressing machines, turnip cutters, gorse bruisers, carts, and waggons.

Messrs. Almack and Bayldon.—Miscellaneous articles; *i. e.*, all those not named above.

Messrs. Clyburn and Parsons.—Steam engines, steamers.

The order of trial was as follows:—Messrs. Outhwaite and Hesseltine on Friday selected ploughs of sorts, scarifiers, harrows, clod crushers, horse hoes, pulverizers, hay-making machines, and horse-rakes; on Saturday they tried ploughs, harrows, clod crushers, &c.; and on Monday they completed their trial of the above, and delivered their award.

Messrs. Paget and Wallis on Friday selected tile machines, grinding mills, tried grinding mills; on Saturday they tried tile machines, select drills, dibbles, manure depositors; and on Monday continued the trial, and delivered their award.

Messrs. Love and Lister on Friday selected thrashing machines, barn works; on Saturday they tried thrashing machines attached to steam power; and on Monday they tried thrashing machines attached to horse power, and completed their trials of barn works.

Messrs. Almack and Bayldon, on Friday, selected such miscellaneous articles as they wished to try, and examine generally; on Saturday they tried miscellaneous articles, and continued general examination until Monday afternoon, when they determined upon the distribution of medals among the miscellaneous articles, and delivered their award.

Messrs. Clyburn and Parsons on Friday selected and examined steam engines, and tested them with force register; on Saturday they tried steam engines, &c., with thrashing machines attached; and on Monday they continued the trial of steam engines until midnight, but were unable to give their award till the following day.

THE SHOW OF IMPLEMENTS.

The chief point of attraction on Tuesday was the implement yard. The light and heavy land implements were also worked on Tuesday, on some land belonging to H. S. Thompson, Esq., of Fairfield, situated in the locality of the great show-field, and kindly placed by that gentleman at the disposal of the society, for the purposes of this department of the meeting.

The implement yard, which we shall first notice, giving a description of some of the principal pieces of machinery, presented a scene of an intensely interesting nature, bearing ample testimony both to the mechanical skill and genius of our machinists; and to the increasing appreciation of the value of agricultural machinery on the part of the English farmer. There is no doubt that the interest taken in this department of the exhibition has wonderfully increased of late years, and the number of persons consequently present in the implement yard on Tuesday and Wednesday was very great. The number of implements entered for exhibition on this occasion exceeded by upwards of 200 that of any former year, occupying 24 sheds, each 252 feet long.

The portion of ground allotted to the implements was well filled, and seeing the number of sheds and the space of ground they occupied, the immensity of this vast mechanical workshop may be more easily imagined than described. In the list of successful competitors will be found the names of makers who have already won great fame among the agricultural public for the excellence of their implements. Of these we may especially notice Mr. Crosskill, Mr. Busby, Mr. Hornsby, Mr. Garrett, Messrs. Barrett, Exall, and Co., Mr. Stratton, Mr. Smith, &c., &c.

It is not our province to enter into a critical disquisition upon the comparative merits and value of the various implements which on every side invite the attention of the visitors to this department of the exhibition, and we shall therefore content ourselves with a general notice of those to which the Judges have awarded the premiums, and of such others as struck us, in our tour through the yard, to require particular observation.

Mr. Busby's prize Two-wheeled Plough, invented, improved (with Ransome's truss-beam) and manufactured by the exhibiter. The prize of £10 was awarded to this plough at the meeting of the Royal Agricultural Society, held at Northampton, in 1847. This implement is capable of working 12 inches

deep when required, and with a lighter mould-board will not be found too heavy to be used as a two-horse plough. Price £5. This implement since it was exhibited at Northampton, last year, has been much improved in the mould-board, and is considerably lighter in draught.

Messrs. Howard and Son's prize Patent Iron Plough, with two wheels, invented and manufactured by the exhibiters, with a new method of fixing the wheels, by which means the width of furrow may be altered more readily than upon the old plan; it is also superior for deep ploughing, and upon dirty land, where the soil accumulates on the old sliding axle. Price £5, if fitted with skim coulter, 6s. extra.

Mr. Hornsby's prize Drill Machine for Corn and general purposes; invented, improved, and manufactured by the exhibitor. This drill received the prizes of the Royal Agricultural Society of England, at Liverpool, July 1841, £25; Bristol, July 1842, £30; Derby, July 1843, £10; at the subsequent triel of drills at Pusey, October 1845, £ ; and at Newcastle-upon-Tyne, July 1846, £15. The above implement is fitted as a 10-coulter corn, seed, and manure drill, and 11-coulter corn and seed drill capable of depositing compost, bones, guano, or any other pulverized manure in a moist or dry state, fitted with stirrers in the manure part, with rotary motion, and lever to put ditto in or out of action as the drill travels. By the use of the stirrers, and the front of the manure box moving inward by a lever, the whole of the manure can be delivered without the assistance of a person pottering. Price £53.

Mr. Garrett's prize Drill for Turnips and Mangel Wurzel with manure, on the flat; invented and manufactured by R. Garrett and Son. This drill was awarded a prize of £10 at the Royal Agricultural Society's Meeting at Cambridge, 1840, and £10 at Northampton, in 1847. A four-row lever drill, for the purpose of depositing turnips or mangel wurzel seeds with artificial or well-rotted farm-yard manure, for either flat or ridge ploughed lands. It is made with improved levers and coulters, whereby the manure may be deeply buried in the land below the seed, and any quantity of soil placed between them. The seed coulters may be adjusted to drill the seeds either deeper or fleeter, as circumstances may require. This drill is also adapted for drilling beans, peas, and carrots, with manure, at any intervals apart. Price £27 12s.

Mr. Hornsby's prize Turnip Seed, Mangel Wurzel, and Manure Drill, two rows upon ridges, and three on the flat; invented, improved, and manufactured by the exhibitor. This drill received the prize of £10 of the Royal Agricultural Society of England at the subsequent trial of drills at Pusey, October, 1845. This drill is fitted on wheels, and is capable of depositing compost, bones, guano, or any other pulverized manure in a moist or dry state, fitted with stirrers in the manure part, with rotary motion and lever to put ditto in or out of action as the drill travels. By the use of the stirrers and the front of the box moving inward by a lever, the whole of the manure can be deposited without the assistance of a person pottering. Also with double-actioned iron levers the manure coulter and seed coulter act independently of each other, so that a large quantity of coarse badly-prepared moist compost can be deposited deep and covered up, and the seed fleet immediately after, or the manure and seed together if required. A pair of concave rollers are also attached to this drill to roll the ridges; the rollers made to shift on the axle to suit different widths, and can be easily taken off when not required. Price £24.

Messrs. Sharman and Co.'s Prize Patent Scarifier, with Seven Wrought-iron Tines; invented by Mr. Arthur Biddell, of Playford, and improved and manufactured by Ransomes and May, of Ipswich. This implement received the prize of £10 from the Society last year at Northampton. It is made principally of wrought-iron, and covers a space of nearly five feet; the tines can be moved to different distances apart to suit various modes of tillage. It is equally efficient as a grubber or cleaner of land, and as a general cultivator where the surface is not required to be turned down; cast-iron or wrought steel hoes, from 4 to 9 inches wide, can be put on, with which it is admirably adapted to clean bean or pea stubble after harvest, break up clover leys where failed, or prepare for turnips. Price, delivered in London, £18 18s.; in Peterborough, Wellingborough, and York, £19 15s.

Mr. Whitehead's new Prize Tile-making Machine, invented and manufactured by the exhibiter. This machine is exceedingly strong, being made entirely of iron, with strong wheels and pinions and double racks, and with only moderate care would work for years without requiring repair. The box will contain 3,744 cubic inches of clay, and will throw out 48 2-inch tiles, each 13½ inches long, with once filling the box. It may be easily turned the whole day by one man, who also may fill the box, while a boy cuts the tiles off and carries them away. The front of the box is large enough to receive a die-plate, with seven 1¼-inch or five 2-inch tiles in width, and if placed one upon another, twelve 1¼-inch or nine 2-inch tiles. Any description of tiles may be made by this machine—pipe-tiles, from 1 to 12 inches diameter, also horse-shoe, ridging, or flat tiles. A wrought iron screen-plate may be attached to this machine when tiles are not being made, for the purpose of extracting stones from the clay. Price, exclusive of screen and die-plates, £23.

Messrs. Howard's Prize set of Patent Jointed Iron Harrows, with Whippletree; invented by W. Armstrong and J. Howard of Bedford, and manufactured by the exhibiters. These harrows are of the same arrangement and strength as No. 9, but furnished with joints in the centre of each harrow, which allows them to drop into the hollow parts of the land, and to harrow a ridge effectually. This set consists of three harrows and whippletree, width ten feet. Price £5 15s.

Messrs. Sharman and Co.'s Prize Portable Steam Generator, with compound tub and vegetable pan; invented by W. P. Stanley, of Peterborough, and Wm. Medworth, London, and manufactured by W. P. Stanley, of Peterborough. It is adapted for quickly generating steam, to be applied to the purpose of cooking linseed, chaff, potatoes, and other food for cattle. It is made of copper and galvanized iron, and can be used without the aid of brickwork. With about one quarter cwt. of coals, 60 gallons of water can be boiled in 30 minutes. A jet of steam is so introduced into the compound tub as to keep the food in agitation, and obviate the necessity of stirring it up in the ordinary way. Price in York, with a 40 gallon copper-lined compound tub and a six bushel vegetable pan, £16; delivered in London or Peterborough, £15 10s.; a larger size to fix in brickwork, £12 10s.; a 60 gallon compound tub £6; an eight bushel vegetable pan, £4 10s.—£23.

Mr. Kilby's prize Turf and Stubble Paring Plough; invented, improved, and manufactured by Thomas Glover, of Thrussington, near Leicester. This implement gained a prize of £3 at the Royal Agricultural Society's show at Liverpool; and £5 at the same Society's show at Northampton; and £2, with a silver medal, at the Yorkshire Agricultural show at Scarbro', 1847. This implement pares turf or stubble ground to any thickness required, from 1 to 3 inches and 14 inches wide. It lays the turf in a hollow curl, a form admirably adapted for drying, and is thus speedily dried for burning. It may be worked by a pair or three horses, according to the nature of the ground and the depth required; and will complete two acres per day. The improvement consists of a simplification of the machinery, by which the same effect is produced, and a reduction in price of £1. Price £5 10s.

Mr. Newberry's prize Seven-rowed Dibbling Machine, invented and improved by Saunder and Newberry, of Hook Norton, and manufactured by the exhibiter, Mr. Hornsby, of Grantham, and Mr. Clyburn, of Uley. It contains seven dibbling wheels, and is the same machine as was exhibited at Northampton last year, and gained a prize of £15. There are eighteen hollow dibbles on each wheel, each dibble, as the wheel turns round, making the hole in the ground, and before leaving, opening and depositing a certain quantity of seed. The quantity of seed is regulated by means of feed rollers placed in the hoppers. Price £60.

Mr. Eaton's prize New Improved One-horse Cart ("Eaton's Patent, No. 1"); invented, improved, and manufactured by the exhibiter. This cart has a patent tipping apparatus and a self-acting tailboard; the wheels are of wood, of superior and well seasoned materials and workmanship, with 2-inch iron arms, and the tire 2½ by ⅝ inch. The body of this cart is constructed of well seasoned oak framing and boarding, with ash shafts and harvest shelvings. The tipping apparatus, as also the self acting tailboard, is a new invention, registered May 1, 1848, being one of the most simple adaptations of mechanical science. The tipping iron is placed up the cart front, and the rod and handle are parallel with the bottom bearer, at the cart side; it releases the body at intervals, or tips quite down without the sword coming out of its place. The tips of the

cart are turned outwards, to admit of the tailboard passing them, which is caught by a spring catch beneath the cart, and being released by a lever raising it, it is caught by a self-acting catch on each side the cart, that passes through an iron attached to the tailboard. This cart will carry from 20 to 25 cwt. Price £12 10s.; without the harvest roves or shelvings, £11 10s.

Mr. Stratton's prize Farm Waggon, with Patent Iron Wheels; invented, improved, and manufactured by the exhibiter. A light straight-roved waggon, with single shafts. The body is formed to allow of the wheels locking well in turning, and is fitted with ladders for hay hauling. Price £34.

Mr. Hornsby's prize Six-Horse power Portable Steam Engine; invented, improved, and manufactured by the exhibiter. The above steam-engine is simple in its construction, fitted with governors, and easy to manage, with tubular boiler, fire-box, and smoke-box complete. The thickness of boiler plates as follows:—fire-box various, $\frac{1}{2}$ in., 7-16ths, $\frac{3}{8}$ in., and $\frac{1}{4}$ in. thick. The horizontal part $\frac{1}{4}$ in. thick; smoke-box $\frac{1}{2}$ in.; and chimney $\frac{1}{2}$ in. thick; the quality, Page's best scrap plates; the diameter of cylinder 10 inches; length of stroke of the piston 14 inches; number of revolutions of the crank shaft 110; crank shaft 3 inches diameter; journals $2\frac{7}{8}$ in., wrought iron; diameter of fly wheels 6 ft.; weight of ditto 7 cwt., which acts as driving pulley. The engine calculated to work at 6-horse power; probable time it will require to generate the steam to working pressure is 45 minutes; quantity of fuel it will consume in getting up the steam is 84lbs.; consumption of fuel for every hour it is in full work is 84lbs.; mounted upon carriages with four wheels and double shafts complete for thrashing corn and other agricultural purposes. Price £255.

Messrs. Barrett, Exall, and Co.'s prize Furze or Gorse Cutting and Bruising Machine; invented and manufactured by the exhibitors. This machine first cuts the gorse as chaff, and then passes it through two sets of rollers running at different speeds, which rubbing the gorse as well as compressing it, reduces it to a sufficiently pulpy condition to render it fit food for cattle. It can be applied to either horse, steam, or water power. Two horses will cut and crush from 250 to 300 bushels per day if the gorse is young. This machine requires two horses to drive it at 75 revolutions per minute. It is driven by gear work and connecting rods attached to a fly-wheel of 4 feet diameter, and which weighs $1\frac{3}{4}$ cwt. Price £25.

Mr. Hornsby's prize Machine for Distributing Pulverized Manures broadcast; invented, improved, and manufactured by the exhibitor. This machine will distribute guano, soot, rape-cake, and other pulverized manures broadcast. Price £14.

Mr. W. N. Nicholson's prize new Cottage Range (with registered improvements); invented, improved, and manufactured by the exhibitor. Price £2 2s.

Mr. Crosskill's prize (medal) Improved Norwegian Harrow; improved and manufactured by the exhibitor. This Norwegian harrow is fitted with three sets of rowels or roller parts, 4 feet 6 in. wide; the rowels revolving separately or independently of each other, thereby avoiding the danger of breakage from stones, &c. The rowel points are of an improved form and length, the more effectually to imitate the action of the garden fork. Price £12.

Mr. Smith's prize (medal) Patent Double-action Haymaker, invented, improved, and manufactured by the exhibitors. This implement, in its first and unimproved form, was honoured by the Royal Society's prize of £5 at the Newcastle meeting (there was no prize offered for hay-makers at the Northampton meeting): it also obtained a prize of £5 5s. at the Derbyshire, and one of £5 5s. at the Great Yorkshire meetings. Since these prizes were awarded, very important improvements have been effected in it by the patentees (Smith and Co. the exhibitors), which, however, do not materially affect its general form and appearance, but relate chiefly to the arrangements of its parts and its construction; compassing that which is so desirable in instruments of agriculture—simplicity, strength, ease of workmanship, and durability. The substituting of wrought for cast iron, wherever practicable or necessary, whilst greatly increasing the strength of the machine, has materially decreased the weight and still more diminished the draught, so that now a stiff cob can work it without difficulty, and a boy may manage to ted and afterwards turn from 20 to 30 acres a day; if a heavy crop a man and one stout horse. The teeth are placed on bars of wood, which have two bearings of wrought iron (formerly only one bearing of cast iron) and two double-action steel springs to each bar (instead of one). The double action, and throwing into and out of work, are obtained, as before, by the simple lever at the side, under the entire control of the person who drives, but may now be done with the thumb and finger. The main spindle is entirely covered, so that the hay cannot wind round. It is adapted to turn the heaviest crops, and works as effectively on irrigated or furrowed land as on other. The body of the machine is raised and lowered to the swarth by an easier and lighter mode. It is mounted on Smith and Co.'s patent wrought iron wheels. When not in use, the shafts are easily removed, and it may be placed in a small space. Price, as before, £15 15s.

Mr. Hensman's prize (medal) gorse drag rake, improved and manufactured by the exhibiters. The teeth of this rake are made entirely of wrought iron, and each tooth works independently on a bar; thus it will accommodate itself to any unevenness in the ground. It has a pull-down lever purchase, by which the man or boy in attendance can raise all the teeth simultaneously, and instantly disengage the load collected without stopping the horse. The wheels are very light, being made of wrought iron, except the nave, which is cast and case-hardened, and thereby rendered very durable. Price £7 7s.

Mr. Garrett's prize (medal) patent horse hoe, invented and manufactured by R. Garrett and Son. This implement was awarded prizes by the Royal Agricultural Society at Liverpool, 1841; at Bristol, 1842; at Derby, 1843; at Southampton, 1844, and Northampton, 1847. It is for the purpose of hoeing between the rows of wheat, barley, beans, peas, turnips, carrots, and mangel wurzel, or any other crops, not drilled at less than 7 or 8 inches apart. It is suited to almost all descriptions of soil, and from its extreme simplicity may easily be managed by all agricultural workmen. It is recommended by the patentees as an invaluable implement on a farm; the facility afforded by its use for hoeing all descriptions of crops at the proper time and season, and in a more effectual manner, and at less expense than can be done by hand, rendering it of the greatest importance to the farmer. One or two horses (depending on the size of the implement) will hoe from 8 to 10 acres per day. Price £11.

Mr. Busby's prize (medal) one-wheeled plough, invented, greatly improved, and manufactured by the exhibiter. Price £4.

Mr. Busby's prize (medal) grass land cultivator (and which, when required, may be used as a hay or stubble rake), invented, improved, and manufactured by the exhibiter. This implement has a leverage attached, which allows the person working it the advantage of pressing the tine into the ground to any reasonable depth that may be required. It has been used by many extensive farmers in Yorkshire for preparing old grass pasture land for the reception of any description of land tillage that may be applied. Price £8 8s.

Messrs. Sharman and Co.'s prize (medal).—A linseed and corn crushing machine, supposed to be invented by Messrs. Bond, of Ipswich, and improved and manufactured by W. P. Stanley, of Peterborough. This is a similar implement to the one exhibited last year at Northampton, which, according to the report of the judges, did its work in 75 per cent. less than any other. The apparatus for feeding and varying the distances of the rollers to suit different kinds of seed has been simplified and improved. Two men can crush one bushel of linseed in 10 or 12 minutes, effectually breaking every seed. It can be profitably and easily applied to horse power. Price £12; delivered in Birmingham, London, or Peterborough, £11 11s.

Mr. Thos. Chandler's prize (medal).—A liquid manure drill; invented by the exhibitor, and manufactured by R. and J. Reeves, of Bratton. For drilling turnips three rows deep on the flat, or two rows on the ridge, or for distributing liquid manure broadcast. Price £22; delivered at Bristol, Southampton, or London, £1 extra.

Mr. Corne's prize (medal).—A registered chaff-cutting machine, with three knives; invented and manufactured by the exhibitor. This machine gained a prize of £10 at the Royal Agricultural Society's meeting at Shrewsbury, 1845, at Newcastle-upon-Tyne, in 1846, and at Northampton, in 1847. This machine is 12 inches in the mouth, $2\frac{3}{4}$ inches thick, with a sliding top roller, and mouth piece; to be worked by two men or machinery, and makes five different lengths of chaff, viz., four for horses, cattle, or sheep, and one length of four inches

for litter; and where a large stock of cattle are kept, it is considered a great advantage, the straw being sooner converted into manure. It is also fitted up with an additional pair of feeding rollers, which regulate the material before entering the front ones next the cut, whereby the danger of the feeders getting their hands entangled in the hay or straw is entirely avoided, when the machine is driven by steam or other power at a great velocity. Price, delivered at Barbridge, £14. This machine is fitted up to cut gorse, furze, or whins, for horses or cattle, one-eighth of an inch in length; £1 extra.

Mr. W. N. Nicholson's prize (medal) new machine for breaking oil cake for beasts, &c. (with registered improvements); invented and manufactured by the exhibitor. This is a machine of considerable power, and calculated (from the peculiar form of the teeth and general construction) for breaking all kinds of English cake as well as most descriptions of foreign cake. Price £6.

Mr. Crosskill's prize (medal) Archimedean root-washer. The box trough of the potato washer, containing the water, is mounted upon wheels and readily moved from place to place. The potatoes put into the hopper pass into the cylinder, partly immersed in water. By turning the handles, the rapid action of the barrel thoroughly washes the potatoes; then, by reversing the action of the handles, the Archimedean screw inside the cylinder empties out the contents without loss of time, or the necessity and labour of elevating and unfastening the barrel, as in other potato washers. The water is drained out of the washer-tub by removing an outlet side-plug. Price £5.

Messrs. Dean, Dray, and Co.'s prize (medal) new cesspool and tank-cleaner, invented and manufactured by the exhibitors. A square, air-tight iron body, with air-pump on top, with a 4½ inch flexible tube, mounted on two wheels, with wooden frame and shafts; also one square sluice-door at bottom for emptying cart. Total weight, about 12 cwt. Price £31 10s.

Mr. Buckshaw's prize (medal) compound lever cheese-press, invented and manufactured by the exhibitor. This press is mounted on a cast iron bench, intended for a large dairy, giving a pressure from five to thirty cwt. by merely shifting a small roller into the different recesses made for that purpose on the first lever. Price £3 10s.

Mr. Summer's prize (medal) new implement for removing shocks of corn, &c., invented and manufactured by the exhibitor. To prevent vegetation in corn, and give it to the seeds, which has been repeatedly inquired after in this part for several years by various individuals. Price 9s.

Mr. Blundell's prize (medal) new agricultural drainage level, invented by the exhibitor, and manufactured by Horne and Co., of 123, Newgate-street, London. A spirit-level, of novel construction, for determining level lines, and ascertaining the angle of sloping lines, intended for the use of farmers in laying drains and ascertaining their proper direction. Price £4 4s.

Mr. Howe's prize (medal) portable four-horse power steam engine, invented and manufactured by the exhibiter. This engine is very simple and strong in all its parts; it is mounted on four wheels, with shafts, &c., complete for travelling. The boiler is fitted with G. Howe's registered water-gauge, by which the exact level of the water in the boiler is at all times seen, and is so constructed that the glass tube is completely prevented from breaking. The following is the construction of the boiler: the plates are three-eighths of an inch thick, and made of the best Staffordshire crown plate, the cylinder is six and a half inches diameter, and the stroke is fourteen inches long. The crank shaft makes from 80 to 100 revolutions per minute, is 3 inches diameter, and made of the best wrought iron. The fly wheel, which serves for the driving pulley, is 5 feet 3 inches in diameter, and weighs 6 cwt. This engine is of four-horse power. It takes about 55 minutes, and about 100lbs. weight of coal, to light the fire and raise steam to the working pressure, which is 45lbs. on the square inch, and consumes about 35lbs. of coal per hour when at full work. Price £170.

Mr. Robinson's prize (medal) steaming apparatus, invented by Isaac Jennings, of New York; improved and manufactured by the exhibiter. Same as the foregoing, only a size smaller. The steam can be raised in less than 20 minutes with 16lbs. of coals, and will consume about 2½ cwt. per day. Price £9 10s.

Having gone through the prize implements at such length, it is quite impossible for us to notice in detail the mass of mechanism generally exhibited. We cannot, however, omit mentioning one decidedly novel and interesting invention, viz., Mr. Crosskill's portable railway for farming purposes, to take turnips, potatoes, and other roots off the land, convey food to and remove manure from stall-fed cattle, to take every kind of produce into and out of the harvest field and homestead; to marl, lime, and manure land; to level, excavate, and embank; for clay pits, brick yards, and tileries. By having a broader gauge, with waggons made to carry a hogshead of sugar, a cask of rum, and, with fixtures to the same, for carrying sugar canes, would make the portable railway most valuable on sugar-growing estates. The cost of a railway, including rails, slips, turn-tables, and waggons, would not exceed £400 to £450 per mile; the immense advantages, at such a small cost, will be apparent to all parties connected with the colonies.

SEEDS, &c.

There was a very splendid show of seeds, especially at the shed of Messrs. Thomas Gibbs, the seedsmen to the Royal Society and to the Boards of Agriculture of England and Sweden. Mr. Taylor, of Banbury, Oxfordshire, exhibited some beautiful specimens of improved harness, among which we noticed a patent inflated air-seat saddle, for riding, with a moveable pannel, invented, improved, and manufactured by the exhibiter. The patent air saddle will be found an excellent article for ladies and gentlemen's riding, and to the invalid it will be invaluable, as the elasticity prevents the shaking, which is frequently occasioned by the rough action of the horse, and is by experienced riders allowed to be the easiest ever invented, both to horse and rider, and which does not, as is suggested by many persons, act as a spring saddle, or tend to shift the rider from his seat; a hard or soft seat may be used as required; price £5 5s. Mr. Lance, of Surrey, exhibited collections of granulated manures, specimens of soils at the different sites of the Royal Agricultural Society's meetings, &c., &c.

Judges of Implements.

Mr. T. P. Outhwaite.	Mr. J. Almack.
Mr. W. Heseltine.	Mr. T. Bayldon.
Mr. P. Love.	Mr. R. Clyburn.
Mr. C. Paget.	Mr. W. N. Parssons.
Mr. O. Wallis.	

Consulting engineer, Mr. Amos.

Awards of the Judges of Implements.

PRIZES.

For the best plough for heavy land, £10—Mr. Busby.

For the best plough for light land, £10—Messrs. Howard and Son.

For the best drill for general purposes, £15—Mr. Hornsby.

For the best turnip drill on the flat, £10—Mr. Garrett.

For the best turnip drill on the ridge, £10—Mr. Hornsby.

For the best hand drilling machine, £5—Withheld.

For the best scarifier or grubber, £10—Messrs. Sharman and Co.

For the best machine for making draining tiles or pipes, £20—Mr. Whitehead.

For the best harrow, £5—Messrs. Howard and Son.

For the best steaming apparatus, £10—Messrs. Sharman and Co.

For the best skim or paring plough, £5—Mr. Kilby.

For the best horse seed dibble, £10—Mr. Newberry.

For the best one-horse cart, £5—Mr. Eaton.

For the best waggon, £10—Mr. Stratton.

For the best thrashing machine £20—Mr. Garrett.

For the best steam-engine, £50—Mr. Hornsby.

For the best corn-dressing machine, £10—Mr. Hornsby.

For the best gorse bruiser, £5—Messrs. Barrett, Exall and Co.

For the best implement for distributing pulverized manure, £10—Mr. Hornsby.

For the best grinding mill, £15—Withheld.

For the best grate or stove for cottages, £5—Mr. W. N. Nicholson.

MEDALS.

Norwegian harrow—Mr. Crosskill.
Hay-making machine—Mr. Smith, of Stamford.
Horse-rake—Mr. Hensman.
Horse hoe on the flat—Mr. Garrett.
Horse hoe on the ridge—Mr. Busby.
Grass land cultivator—Mr. Busby.
Linseed and corn crusher—Messrs. Sharman and Co.
Liquid manure drill—Mr. T. Chandler.
Chaff cutter—Mr. Cornes.
Cake breaker—Mr. W. N. Nicholson.
Root washer—Mr. Crosskill.
Cesspool and tank cleanser—Messrs. Dean, Dray, and Co.
Cheese press—Mr. Bruckshaw.
Shock remover—Mr. Summers.
Level—Mr. Blundell.
For his improvements in the transparent water gauge, as attached to the steam-engine—Mr. Howe.
Steaming apparatus—Mr. R. Robinson.
Self-acting hopper as applied to his drill—Mr. Hensman.
Thrashing, shaking, and dressing machine — Mr. Abbey.
Portable thrashing, straw shaking, and dressing machine—Mr. Burrell.

Amongst the noble and distinguished persons who visited the grounds in the course of the day were his Royal Highness the Duke of Cambridge, his Grace the Duke of Richmond, the Earl of Yarborough (the president of the society), and the Earl of Lonsdale.

SECOND DAY.—WEDNESDAY.

Upon the arrival of his Royal Highness Prince Albert at the Judges' lodgings, on Wednesday, about half-past three o'clock in the afternoon, the Lord Mayor, accompanied by the Recorder, Aldermen, Councillors, and Town-clerk, had the honour to present an address, of which the following is a copy :—

"TO HIS ROYAL HIGHNESS PRINCE ALBERT, K.G.

"May it please your Royal Highness,

"We, the Lord Mayor, Aldermen, and Councillors of this city of York, on behalf of ourselves and our fellow-citizens, beg leave to express to your Royal Highness our heartfelt pleasure and gratification in being allowed to present to your Royal Highness the assurance of our unabated regard and attachment.

"The numerous virtues which adorn the character of your Royal Highness, and which have been so eminently conspicuous since your happy union with our most gracious and beloved Queen, command our sincere respect and admiration.

"We are truly grateful for the distinguished honour conferred upon us by this the first visit of your Royal Highness to the ancient and loyal city of York; and we most respectfully offer our cordial wishes that your Royal Highness and our beloved and gracious Queen may long continue in the enjoyment of uninterrupted health and domestic happiness.

"Given under our Common Seal the 12th day of July, 1848. "L. S."

His Royal Highness was pleased to make the following gracious reply :

"I have to thank you for your dutiful address, and to assure you of the pleasure which I feel in visiting the important city of York, with which so many historical associations are connected, and of the gratification I have met with."

The Lord Mayor and Corporation, who were accompanied by the Archbishop of York, the Dean of York, the Magistrates, &c., then retired.

The Prince then proceeded to the show ground, attended by his suite; and after his return joined the dinner of the council of the society at the Guildhall.

COUNCIL DINNER.

The banquet was on the most magnificent scale. Covers had been laid for 300 guests, and fully that number sat down. In front of the gallery was a splendid illuminated device, in which was embodied the initials "V. R.," surmounted by a crown.

On the arrival of the Prince Consort, the band played the National Anthem, and his Royal Highness was welcomed by a hearty cheer, the company all standing.

The Earl of Yarborough, President of the Society, occupied the chair; the Earl of Chichester, President-elect, the vice-chair.

On the right of the chair sat his Royal Highness Prince Albert, the High Sheriff of Yorkshire, his Excellency the Belgian Minister, the most noble the Marquess of Abercorn, and Lord Morpeth.

On the left of the chair were the Right Hon. the Lord Mayor of York, the Chevalier Bunsen (Prussian Minister), the Hon. E. Bancroft (American Minister), and the Earl Fortescue.

In the body of the hall were his Grace the Duke of Richmond, Lord George Bentinck, the Earl of Lonsdale, Lord Ingestre, Lord George Beresford, Lord Beaumont, Lord Zetland, Sir John V. B. Johnstone, Bart., M.P. (steward of the dinner); Sir C. Anderson, Bart.; Sir J. Boileau; the Hon. A. Duncombe, M.P.; the Hon. and Rev. A. Duncombe; the Hon. O. Duncombe, M.P.; the Hon. Colonel Phipps; the Hon. Captain Seymour; the Hon. G. Anson; the Hon. Mr. Clive; the Baron de Langan; Captain Harcourt; H. S. Thompson, Esq., Mote Hall; Mr. Philip Pusey, M.P.; Mr. Hudson, M.P.; Mr. G. Stephenson; Mr. Alderman Thompson; Mr. Alderman W. Richardson; Captain Stanley Carr; General Brotherton; Mr. Paxton; Mr. Shelley; Colonel Challoner; Mr. Dent; Mr. Neville; Mr. Hildyard; the Rev. Canon Johnstone; Mr. Osarston; Mr. Lloyd; Mr. Barratt; Mr. Legard; Mr. Pulleine; Mr. Crompton; Mr. Milner, M.P.; Mr. Stanfield, M.P.; Captain Shawe; Mr. C. Howard; Mr. R. Creyke, &c.

The cloth having been removed, after proposing her Majesty, "The Queen,"

The PRESIDENT said the next toast is one which it is customary to drink at these council dinners, viz., the Queen Dowager, his Royal Highness Prince Albert, Albert Prince of Wales, the Duke of Cambridge, and the rest of the Royal Family. It has always been customary to drink that health with the greatest pleasure, because we have had the honour of counting among our members, from the very first formation of the society, the Duke of Cambridge; and since that time, and immediately when we obtained the royal charter, it pleased his Royal Highness the Prince Albert to join us, and to become a governor of this society (Hear, and loud applause). And I am sure that I say no more than everybody feels, when I assure his Royal Highness that we are pleased and gratified that his Royal Highness has come amongst us. He has come amongst us on this occasion; and I am reminded by some gentlemen that his Grace the Duke of Cambridge, who has been in York during the present show, and who has visited the show yards, would have been present on this occasion had it

not been that he was prevented by other engagements (cheers). However, I am proud to have to inform you that his Royal Highness Prince Albert will be enabled to attend the dinner to-morrow in the pavilion (Hear, hear, and cheers). Therefore, independently of the attachment that we feel as farmers of England towards the royal family, we are glad to observe that his Royal Highness freely mixes with the farmers of England at these agricultural dinners. I will now propose, as the next toast, "The healths of the Queen Dowager, Prince Albert, Albert Prince of Wales, the Duke of Cambridge, and the rest of the royal family" (loud cheers).

His Royal Highness PRINCE ALBERT then rose. He was greeted by plaudits of some minutes' duration. He said: My lords and gentlemen, you must allow me to express to you my very sincere thanks for the kindness with which you have received the toast. I think I should be acting contrary to the rules of the society if I were to detain you by a long speech. I have, therefore, merely to repeat to you how grateful I am, and how gratified I feel, for the kindness which you have shown me on this occasion (loud cheers).

The PRESIDENT rose and said: Gentlemen, I dare say most of those present are aware that it has been the wish of the council of the Royal Agricultural Society that this meeting should not be merely convivial, but that there should be some practical information obtained by the assembling together of two or three hundred gentlemen in a room like this (Hear, hear). And it has occurred to the members of the council that as a lecture has been delivered this day, which I regret that I could not attend in consequence of other engagements, and having to attend his Royal Highness Prince Albert in inspecting the stock in the cattle-yard—that lecture being upon the subject of calving—the council have thought it would be of advantage to the society, and to the farmers generally, if a discussion were to take place on the subject, especially as what is said here is generally spread among a great number of the farmers of England. They have, therefore, thought that it would be an advantage to have the opinion of practical men as to the best way of rearing cattle from the time that they are dropped to their being a year old. But many farmers (especially those who are fond of fox-hunting) know that if you would have sport, you must first find a fox (Hear, hear). Allow me, then, gentlemen, to ask Mr. Thompson to begin the discussion upon this interesting subject (cheers).

H. S. THOMPSON, Esq., of Kirby Hall, then rose and said he would not have undertaken to introduce this discussion had he not been informed that many gentlemen who, although both able and willing to take part in the discussion, disliked to make the commencement. Therefore, as every honest farmer ought always to be ready to communicate the result of his experience for the benefit of his brethren, he would communicate to them without delay that which he had found to be the best method of rearing calves. He would divide his observations into the summer and winter treatment of calves. With respect to the summer treatment, his system was chiefly applicable to those farms which contained a certain quantity of good grazing land. In those cases the farmer would be anxious to devote the inferior land to lean stock; and as lean stock was dear, and of inferior quality, there was a greater inducement to breed stock of a much better description. The system he had found to answer best was to purchase at the beginning of summer a number of young heifers, from a year and a half to a year and three quarters old; to put them to the bull in June or July; to turn them on inferior land in the summer, and to the straw-yard in winter, but keeping them on the grass land in the day time. He always allowed his cows to suckle their calves. He always found it best to turn them with their calves on the same description of land in the summer, and in about the end of October to wean the calves and sell the mother, or to tie her up for fencing. Thus he had a calf at six months old at a very reasonable price. He knew it was generally considered extravagant to allow calves to suck their mothers, but the question had been complicated, by farmers calculating the profit they would have made if they had milked the cows, and manufactured the milk into butter or cheese. If estimated in that way, the matter became complicated, because the farmers had to deduct the expense of milking and churning, of taking to market, &c.

Sir TATTON SYKES here rose and exclaimed—Mr. Thompson, I quite agree with you (laughter, and loud cries of "Order.")

Mr. THOMPSON continued: He estimated the cost in this way: The land he was speaking of should not be rented higher than £1 per acre; and an acre and a half would be sufficient to carry a heifer of a year and a half old for the first summer. The cost of maintaining her for the first summer would be 30s.; in winter there would be £1 for the cost of the straw in addition. The second year with a calf the cow would require two acres of grass; which would be £2 for the second summer. The expense therefore would be 30s. for the first summer, and £2 for the second summer; but as he would now have to sell a cow which would be worth £2 more than when the calf was born, that would reduce the expense to £2 10s. If gentlemen had not grass land they would give what milk they could spare, and make up with linseed porridge, which, however, was not equal to milk. With regard to the winter keep, it was of consequence to provide a sheltered yard for the young stock, and not to allow them to mix with the elder ones. The way that he had found to answer was to provide an open yard with a shed facing the south or south-east, and divided with posts and rails, so that each division of the yard afforded access to the sheds behind, in which there was a feeding trough and a passage, along which a man could go and feed the calves in all the pens without having to open a single gate. By this means they would also be enabled to enclose the calves, so as to prevent the strong from robbing the weak. The fodder he gave to the calves in winter was turnips—three stone a day on the average through the winter, but increasing the quantity as the weather got colder. Calculating the keep of the calves at three stone per day, and the turnips at the quantity per acre, they would consume during the three months of winter nearly sixteen tons. He found mangel wurzel the best, and half an acre to three roods of land would keep the calf for three months. He gave oilcake, which, at £3 per ton, would be 20s. a-head during the winter. The great advantages of this way of keeping were, that the calf never lost its calf layer, and if carried on the second year they would be able to sell their stock whenever they pleased; and if it suited them to keep them beyond two or three years, no stock could pay them better. As this was a much higher rate of keeping than was usual, they would expect him to prove that it was a profitable mode of investing capital. In proof that it was the best way of doing so, he would repeat what he had done on that system. The first trial he made was in 1841, and the first hint he received on the subject was from Sir Tatton Sykes. He had some heifers for this purpose, the young stock being three years and a quarter old. This stock would pay well. He had made no deduction for the improved quality of the manure; which ought, however, to be taken into the account. He had heard prepared linseed recommended for calves; it had been advocated by Mr. Marshall, and he (Mr. Thompson) also recommended it. He had used it for horses and young cattle. It was much better for them, although he was aware it was somewhat of an ex-

travagant system of farming. The time was gone by for a large stock to be reared on small capital. The plan was to keep young stock well from the day they were calved.

The CHAIRMAN rose and stated that he had omitted to state that the council of the society had recommended that the gentlemen who addressed the meeting on this subject should confine themselves as near as possible to a quarter of an hour. Their friend Mr. Thompson had just been fourteen minutes and thirty seconds (laughter).

Sir TATTON SYKES, Bart., said he agreed with everything that Mr. Thompson said, from end to end. The plan that gentleman had recommended was the best that any man ever adopted.

Mr. TURNER, of Devonshire, said he had not intended to have taken any part in the discussion, particularly in the presence of the illustrious visitor who had that day honoured them with his presence. He assured his Royal Highness that no one was more deeply sensible of the honour he had conferred on the meeting than himself. As he (Mr. Turner) had been a successful breeder of Devonshire cattle, he felt bound to give to the society all the knowledge he possessed (cheers). It was the custom in Devonshire to let the calf suck the cow, assuming the calf was dropped in the winter months; for it was dangerous to drop a calf in the summer months of the year. From the time of birth to ten days old it was allowed to suck a good deal of milk. At the end of ten days they took it from the cow, and gave it six pints of new milk twice a day. This was continued two or three weeks, according to the strength of the calf; at the end of that time they withdrew a portion of the new milk, and gave the animal some skim milk; in addition to this they gave it oatmeal, hay, and turnips, taking care that it should be kept perfectly clean, with a free circulation of air, and well littered up. Two or three weeks after this the calf eats meat with avidity; the new milk is withdrawn, and skim milk given. It was continued five or six weeks longer, and then the calf fed heartily on cut meat and oatmeal, after which it lives well on cut meat. It was kept in during the winter months, and then on the first sunshiny season they gave the calf the free use of his limbs. They then turned him into a good pasture, and was shifted from one to another as convenient; for he held as an essential point, that it was necessary for every young animal, during the first year of its existence, to be fed on different kinds of food. The case of calves and lambs was similar in this respect with young children and every other animal (laughter). His own calves were carried on in this way, being taken in at the latter end of October or the beginning of November. The yard was kept clean and well littered, and the animal had a little hay, and chopped straw, and turnips. In the winter months the animal might have mangel-wurtzel. Thus it was kept during the winter months; and when spring arrived, they turned it into the first good pasture they could, and all trouble was then at en end. That was the doctrine he had pursued with his calves. He believed there was nothing new in the system: he had, however, found it to answer his purpose, and he had never found a dear animal to follow. He held it to be most essentially necessary that the animals should not be forced. If they forced their calves in a manner that some of our stock were treated, perhaps the very next that came under their notice they found very unprofitable. He would only repeat what he had before stated, that if he could offer any observation which would tend to produce a beneficial result, not only to the agriculturists of England, but to the Royal Agricultural Society, he should readily, on all occasions when practicable, do so (applause).

The Hon. Mr. PELHAM observed that, having respect to the suggestion offered by the noble chairman, he purposed not to speak for a quarter of an hour. The discussion was between Mr. Thompson and Mr. Turner as to feeding calves from a pail or suckling them. He would simply say for himself, that he went something between the two (laughter)—inasmuch as he quite went with both gentlemen as to high keeping them; but he believed it would be found, instead of the common practice of putting their animals for the first fortnight on skim milk, which the chemists told them was not by any means a judicious plan, to be advisable to get a substitute for new milk. His system was a simple, and not an expensive one. After the first fortnight he took off the new milk, he took a quarter of a pound of linseed, a quarter of a pound of bean-meal, by way of restoring the casein to the new milk, and added a quarter of a pound of molasses. He found this not an expensive plan; and without stating whether Mr. Thompson was right with respect to sucking calves or not, he merely meant to say he found this a satisfactory, and he believed it was not an extravagant plan (applause).

Mr. BARRETT, of Biggleswade, next rose and said: Having been requested by some members of the council to be prepared to make a statement of his mode of raising cattle, in order that he might avoid inaccuracy in his statement, he had reduced what he had to say to writing; and, if they would allow him to refer to the paper in his hand, he would state as concisely as possible his mode of rearing calves, and his treatment of cows and young stock, which, he might say, has been somewhat successful, as he had not lost a calf "from scouring" during the last three years. In summer, in hot weather, for two or three days before calving, the cows are kept in a cool hovel during the heat of the day, not bled or physic given, even in high condition; and he seldom found it necessary to administer physic after calving; but, if he perceived any inflammatory symptoms, he gave one pound and three quarters of Glauber salts, half a pint of linseed oil, and one drachm of ginger, in a quart or three pints of warm water, but did not bleed unless the inflammation was acute. He left the calf with the cow four or five days, then removed it to the calf pens, which are constructed so as to be very cool in summer, and sufficiently warm in winter. He preferred pens, thinking that when young calves are tied up it irritates them and produces scouring. When taken from the cow, he gave three quarts of new milk morning and evening for four weeks; at three weeks old a very small quantity of crushed linseed and chaff; at a month he added "sweet" skim milk, two quarts, reducing the new to two quarts, and increasing the quantity of linseed, chaff, and adding fine pollard; at six or seven weeks old he added skim milk, and then half a pint crushed linseed, and more chaff and pollard. The skim milk he continued as long as there was any to spare from the younger calves. He found it useless to give a very liberal allowance of new milk to a calf after six weeks old; he thrives better by using sweet skim milk, and he accounts for it in the following manner:—The new milk satisfies his appetite, and he does not consume a sufficient quantity of linseed and chaff for his age. If a calf scoured, which it seldom did, he gave the following: One ounce of salts in half a pint of warm beer, stopping their milk at morning feeding time, and reducing the quantity the next three times of feeding; and should the attack be more severe, and not give way to this treatment, he boiled the milk for a few days. Should the scouring be attended with much pain, indicated by the calf groaning and looking back at its flanks, he gives one ounce of linseed oil, and takes away a small quantity of blood, according to the age of the calf, say from four ounces to eight ounces from a week to eight weeks. His cows calve at all periods of the year, but he

considers September the best month for aged cows, both for dairy profit and the calves, which became strong to turn out the following spring. Heifers should calve in April, as the grass in May forces their milk and lays the foundation for their becoming good milkers. He never turned any calves out to grass that are calved after March, until the following spring. His herd consists of from 25 to 30 cows. He was aware that some people might find this mode of bringing-up expensive the first six weeks; but taking into consideration the condition and the health of the calf, and the very little labour attending this plan, he was inclined to think there is not much gained by the various cookeries that are sometimes resorted to. He attributed the success he had had to the new milk system. He objected to the system of cooking for young calves, but after the first year it might be the best mode in which they could fatten cattle, and bring them to market.

Mr. SHAW (Northampton) said that the attention which the meeting had paid to the observations of tenant farmers induced him to offer a few observations upon the topic under discussion. He differed both with Mr. Turner and with Mr. Thompson, and thought that a good calf could never come wrong. Much, however, in regard to feeding, was whether they were to be reared upon the produce of ploughed land, or whether they were to be fed upon grass. If they wished their calves to go upon ploughed lands, the quicker they go from their mother the better. He was himself a dairy farmer, and sold a good deal of milk. He never suckled more than eight weeks, and did not give after that more than a quart a day; but he gave them oil-cake, or cut hay to induce them to eat. By these means he got them to eat at three weeks old. He found that by giving them linseed to eat for a certain period—not for long, as he considered linseed to be a bad thing when too long continued—that a change for oat cake was the best thing. He repudiated the notion that beef should be fed on grass, and thought that his system had proved far preferable, when conjoined with stall-feeding. He had an excellent proof of this in his own experience. At the present moment he had an animal two years and eight months old, which weighed 108 stone (Hear, hear). This was done by cutting all its food, and giving it first oat-flour; and beans as it grew older. If he were to follow the practice recommended, and turn them out to grass, he would lose by his calves; and that led to the question of whether they should stall-feed their calves or turn them out to grass. It led also to the question whether they should suit the land to the cattle, or the cattle to the land. There was great favour now shown to the Norfolk system, which was held up as a pattern; and he could remember when the Herefordshire men brought them their cattle to feed; but now they sent them to London ready fattened for the market. He did not deny that they might with profit turn them out to grass, provided they gave them oatmeal and linseed, and beans when they were able to take them; but he preferred stall-feeding nevertheless. He was a midland counties man, and as such he thought it right to declare that he had found it difficult to follow out the early maturity system profitably, when combined with grass-feeding (applause).

A GENTLEMAN present asked whether the stone spoken of by the speaker was the stone of 8lb. or 14lb.? (Hear).

Mr. SHAW: Eight pounds to the stone (Hear, hear).

Mr. MECHI held it as a principle that they could never improve nature, and therefore it was their duty to follow her as closely as possible (Hear, hear). The same remarks applied to the rearing of a calf as to the child of human beings. If the Almighty had provided the parent with food containing the best materials for forming the perfect animal, which no one could for a moment doubt, and if they were desirous of following nature, they must, if they removed the young animal from its mother, give it those things which come as near as possible to the mother's food (Hear, hear). They all knew that when they reared a child they gave it food assimilating in its nature to its mother's food as near as possible; and the same laws applied to the young of the lower animals as to the young of man (Hear, hear). They should give food which would ensure the growth of bone, fat, and muscle. He saw an attempt to follow this principle in the food recommended by preceding speakers who had been enlightening them. Some gave oatmeal or nitrogen; others, linseed or carbon; and they ought also to give oatcake for the phosphates. Depend upon it, as his friend from the agricultural college would tell them, they must not rely on any one meal; but they must so contrive their food that they may give the phosphates, the nitrogen, and the carbon. Whatever they found necessary to give to grow a good strong man, they would require to be given, in order to rear a strong, healthy, and valuable calf (Hear, hear, and applause). He would not stop to discuss the relative merits of the scheme propounded; but he must say a word about the poor grass land that had been spoken of. They must not hear of poor grass land, either for feeding the animals or the farmer. He maintained, practically maintained, that poor grass land was the curse of the tenant, the landlord, and the country at large (loud cheers). With respect to the remarks which had been made in reference to the time for turning calves out, he expressed it as his opinion that the state of the weather ought to guide them. If it was a warm day, they ought to be turned out; but if cold, the best plan was to keep them up. He deprecated the system of feeding calves merely for sale, as tending to rob the land. They must feed their calves, and keep them, and then they would prosper (Hear, hear).

The CHAIRMAN said, as they had heard the different modes of feeding calves, perhaps it would be agreeable to them now to learn the result of the exertions of those who had been feeding them for this agricultural exhibition (Hear, hear). The secretary had arrived with a list of prizes which had been awarded by the judges, and if it would be agreeable to them he would call upon him to read the list (cheers).

JAMES HUDSON, Esq., the secretary, then read the following list of prizes awarded by the judges:—

SHORT-HORNS.

Judges of Bulls—Messrs. Swaffield and Walker. Judges of Cows and Heifers—Messrs. Stokes and Torr.

Class 1.—Bulls calved previously to the 1st of January, 1846—The first prize of 40 sovs. to Mr. R. Keevill, Shaw Farm, Melksham, Wiltshire. The second prize of 20 sovs. to Mr. A. Banneman, South Cottage, near Chorley, Lancashire.

Class 2.—Bulls calved since 1st of January, 1846.—The first prize of 20 sovs. to Mr. William Linton, Sheriff-Hutton, Yorkshire. The second prize of 10 sovs. to Mr. Thomas Crisp, of Hawkhill, near Alnwick, Northumberland.

Class 3.—Cows in milk or in calf.—The first prize of 20 sovs. to Mr. J. M. Hopper, Newham Grange, Stockton-on-Tees. The second prize of 10 sovs. to Mr. R. Booth, Warlaby, Northallerton, Yorkshire.

Class 4.—In-calf heifers.—The first prize of 20 sovs. to Mr. R. Booth, Warlaby, Northallerton. The second prize of 10 sovs. to Mr. J. B. Stanhope, Revesby Abbey, near Boston, Lincolnshire.

Class 5.—Yearling heifers.—The first prize of 10 sovs. to Mr. William Smith, West Rasen, near Market Rasen, Lincolnshire. The second prize of 5 sovs. to Mr. J. Kirkham, Hagnaby, Spilsby, Lincolnshire.

HEREFORDS.

Judges—Messrs. Chamberlaine, Etches, and James.

Class 1.—Bulls calved previously to the 1st of January, 1846.—The first prize of 40 sovs. to Mr. J. N. Carpenter, of Eardisland, near Leominster, Hereford. The second prize of 20 sovs. to Mr. H. Higgins, of Brinsop Court, near Hereford.

Class 2.—Bulls calved since 1st January, 1846.—The first prize of 20 sovs. to Mr. J. Monkhouse, of the Stow, near Hereford. The second prize of 10 sovs. to Mr. E. Williams, Lowless Court, near Hay, Radnor, South Wales. The third prize to Mr. S. Aston, Lynch Court, near Leominster.

Class 3.—Cows in calf or in milk.—The first prize of 20 sovs. to Mr. E. Williams, Lowless Court, near Hay, Radnor, South Wales. The second prize of 10 sovs. to Mr. S. Aston, Lynch Court, near Leominster.

Class 4.—In-calf heifers.—The first prize of 20 sovs. to Mr. J. Walker, Holmer, Hereford. The second prize of 10 sovs. to Mr. S. Aston, Lynch Court, near Leominster.

Class 5.—Yearling heifers.—The first prize of 10 sovs. to Mr. W. F. Hobbs, Boxtead Lodge, near Colchester. The second prize of 5 sovs. to Mr. S. Aston, Lynch Court, near Leominster.

DEVONS.

Judges—Messrs. Chamberlaine, Etches, and James.

Class 1.—Bulls calved previously to the 1st of January, 1846.—The first prize of 40 sovs. to Mr. J. Hole, of Knowle House, near Dunster, Somerset. The second prize of 20 sovs. to Mr. T. W. Fouracre, of Durston, near Taunton, Somerset.

Class 2.—Bulls calved since 1st January, 1846.—The first prize of 20 sovs. to Mr. G. Turner, of Barton, near Exeter. The second prize of 10 sovs. to Hon. Dudley Pelham, of St. Lawrence, Ventnor, Isle of Wight.

Class 3.—Cows in milk, or in calf.—The first prize of 20 sovs. to Mr. Thomas Bond, of Bishop's Lydiard, near Taunton, Somerset. The second prize of 10 sovs. to Mr. T. W. Fouracre, of Durston, near Taunton, Somersetshire.

Class 4.—In-calf heifers.—The first prize of 20 sovs. to Mr. T. W. Fouracre, of Durston, near Taunton, Somerset. The second prize of 10 sovs. to Mr. George Turner, of Barton, near Exeter.

Class 5.—Yearling heifers.—The first prize of 10 sovs. to Mr. James Hole, of Knowle-house, near Dunster, Somerset. The second prize of 5 sovs. to Mr. T. W. Fouracre, of Durston, near Taunton, Somerset.

CATTLE OF ANY BREED.

Judges—Messrs. Chamberlaine, Etches, and James.

Class 1.—Bulls calved previously to the 1st of January, 1846.—The first prize of 25 sovs. to Mr. E. Cane, of Berwick-court, Lewes, Sussex. Second prize of 10 sovs., no competition.

Class 2.—Bulls calved since the 1st of January, 1846.—The prize of 15 sovs., no competition.

Class 3.—Cows in milk or in calf.—The prize of 15 sovs., to Mr. John Bowes, of Streatham Castle, near Barnard Castle, Durham.

Class 4.—In-calf heifers.—The prize of 10 sovs. to Mr. Thomas Beards, of Stowe, near Buckingham.

Class 5.—Yearling heifers.—The prize of 10 sovs. to Mr. Thomas Beards, of Stowe, near Buckingham.

HORSES.

Judges—Messrs. Spooner and Day.

Class 1.—Stallions for agricultural purposes.—The first prize of 30 sovs. to the Most Hon. the Marquess of Downshire. The second prize of 15 sovs. to Mr. J. Ward, of East Mersid, near Colchester, Essex.

Class 2.—Stallions for dray purposes.—The prize of 20 sovs. to Mr. G. Townsend, Sapcote-field, near Hinckley, Leicester.

Class 3.—Two-year-old Stallions for agricultural purposes.—The first prize of 15 sovs. to Mr. H. Eddison, of Gateford, near Worksop. The second prize of 10 sovs. to Mr. J. Dennison, of Morker, near Ripon.

Class 4.—Mares and Foals for agricultural purposes.—The first prize of 20 sovs. to Mr. A. Chibnall, of Bromham, near Bedford. The second prize of 10 sovs. to the Right Hon. Lord St. John, of Melchbourne, near Higham Ferrers, Bedford.

Class 5.—Two-year-old Fillies.—The first prize of 10 sovs. to the Right Hon. Lord St. John, of Melchbourne, near Higham Ferrers, Bedford. The second prize of 5 sovs. to the Right Hon. Lord St. John, of Melchbourne, near Higham Ferrers, Bedford.

LEICESTER SHEEP.

Judges—Messrs. Chapman, Wright, and Franklin.

Class 1.—Shearling ram.—The first prize of 30 sovs. to Mr. J. Borton, of Barton-le-street, near Malton, Yorkshire. The second prize of 15 sovs. to Mr. H. B. Harvey, of Pulham St. Mary, Harleston, Norfolk.

Class 2.—Rams of any other age.—The first prize of 30 sovs. to Mr. J. Borton, of Barton-le-street, Malton, Yorkshire. The second prize of 15 sovs. to Mr. W. F. Hobbs, of Boxstead Lodge, Colchester, Essex.

Class 3.—Shearling ewes.—The first prize of 20 sovs. to Mr. W. Sanday, of Holme Pierrepoint, Notts. The second prize of 10 sovs. to Mr. W. Sandy, of Holme Pierrepoint, Notts.

SOUTHDOWN SHEEP.

Judges—Messrs. Purves, Maton, and Grantham.

Class 1.—Shearling rams.—The first prize of 30 sovs. to Mr. J. Webb, of Babraham, near Cambridge. The second prize of 15 sovs. to Mr. J. V. Shelley, of Maresfield-park, near Uckfield, Sussex.

Class 2.—Rams of any other age.—The first prize of 30 sovs. to Mr. Wm. Sainsbury, of West Lavington, near Devizes, Wilts. The second prize of 15 sovs. to Mr. Geo. Drake, of Manor-farm, East Tytherley, Stockbridge, Hants.

Class 3.—Shearling ewes.—The first prize of 20 sovs. to his Grace the Duke of Richmond, of Goodwood, near Chichester. The second prize of 10 sovs. to Mr. J. V. Shelley, of Maresfield park, near Uckfield, Sussex.

LONG-WOOLLED SHEEP.

Judges—Messrs. Beman, Clarke, and Cox.

Class 1.—Shearling rams.—The first prize of 30 sovs. to Mr. G. Hewer, Ley Gore, Northleach, Gloucester. The second prize of 15 sovs. to Mr. G. Hewer, Ley Gore, Northleach, Gloucester.

Class 2.—Rams of any other age.—The first prize of 30 sovs. to Mr. W. Garne, of Aldsworth, Northleach, Gloucester. The second prize of 15 sovs. to Mr. E. Handy, of Sevenhampton, Andoversford, Gloucester.

Class 3.—Shearling ewes.—The first prize of 20 sovs. to Mr. C. Large, of Broadwell, Oxfordshire. The second prize of 10 sovs. to Mr. W. Simpson, of Kirby Grindalyth, Sledmere, Yorkshire.

PIGS.

Judges—Large breed, Messrs. Elliott and Claydon.
Judges—Small breed, Messrs. Kemp and Ellison.

Class 1.—Boars of a large breed.—The first prize of 15 sovs. to Dr. Hobson, Park House, Leeds. The second prize of 5 sovs. to Dr. Hobson, Park House, Leeds.

Class 2.—Boars of a small breed.—The first prize of 15 sovs to Mr. R. Smith, Givendale, Ripon, Yorkshire (this anima. was of Mr. Fisher Hobbs' breed). The second prize of 5 sovsl to Mr. W. F. Hobbs, Boxstead Lodge, Colchester, Essex.

Class 3.—Breeding Sows of a large breed.—The prize of 10 sovs. to Mr. J. Tuley, Exley Head, Keighley, Yorks.

Class 4.—Breeding Sows of a small breed.—The prize of 10 sovs. to Mr. E. Eddison, Headingley-hill, near Leeds.

Class 5.—Three breeding sow pigs of a large breed.—The prize of 10 sovs. to Mr. Tuley, Exley Head, Keighley.

Class 6.—Three breeding sow pigs of a small breed.—The prize of 10 sovs. to Mr. J. Roper, Keighley, York.

LOCAL PRIZES.

SHORT HORNS.

Judges of bulls.—Messrs. Walker and Swaffield.
Judges of cows and heifers—Messrs. Stokes and Torr.

Class 1.—Bulls of any age.—The first prize of 20 sovs. to

Mr. H. Ambler, of Watkinson-hall, near Halifax, Yorkshire. The second prize of 10 sovs. to Mr. Thomas Bates, of Kirkleavington, near Yarm, Yorkshire.

Class 2.—Bulls above one year and not exceeding two years. —The first prize of 20 sovs. to Mr. William Linton, of Sheriff Hutton, Yorkshire. The second prize of 10 sovs. to Mr. J. B. Thompson, of Anlaby, near Hull, Yorkshire.

Class 3.—Best cow above three years old.—The prize of 10 sovs. to Mr. R. Booth, of Warlaby, near Northallerton, Yorkshire.

Class 4.—Pair of in-calf heifers.—The prize of 10 sovs. to Mr. Richard Booth, of Warlaby, near Northallerton, Yorkshire.

HORSES.

Judges—Messrs. Greaves and Karkeek.

Class 1.—Stallions for hunting purposes.—The first prize of 30 sovs. to Mr. R. Gaunt, of Hall Field Cottage, Wetherby, Yorkshire. The second prize of 15 sovs. to Mr. Silvester Reed, of York.

Class 2.—Stallions for carriage purposes.—The first prize of 30 sovs. to Mr. J. Shaw, of Acomb Hall, Yorkshire. The second prize of 15 sovs. to Mr. Henry Elgie, of Thrintoft, near Northallerton, Yorkshire.

Class 3.—Stallions qualified to get roadsters.—The prize of 20 sovs. to Mr. J. Wake, of Market Weighton, Yorkshire.

Class 4.—Cleveland stallion.—The prize of 20 sovs. to Mr. J. Langdale, of Leakonfield Park, near Beverley, Yorkshire.

Class 5.—Mare and foal for hunting purposes.—The first prize of 20 sovs. to Mr. W. Firth, of Kirkstall, near Leeds, Yorkshire. The second prize of 10 sovs. to Mr. J. Mewburn, of Leake House, near Thirsk, Yorkshire.

Class 6.—Mare and foal for carriage purposes.—The first prize of 20 sovs. to Mr. R. Goodlass, of Hutton Cranswick, near Driffield, Yorkshire. The second prize of 10 sovs. to Mr. J. Haw, of Flawith, near Easingwold, Yorkshire.

Class 7.—Cleveland mare and foal.—The prize of 20 sovs. to Mr. H. Rickatson, of Upsall, near Thirsk, Yorkshire.

LEICESTER SHEEP.

Judges—Messrs. Chapman, Wright, and Franklin.

Class 1.—Shearling ram.—The prize of 15 sovs. to Mr. John Borton, of Barton-le-Street, near Malton, Yorkshire.

Class 2.—Shearling ewes.—The prize of 5 sovs. to Mr. W. E. Botterill, of East Thorpe, Market Weighton.

LONG-WOOLLED SHEEP.

Judges—Messrs. Beman, Clarke, and Cox.

Class 1.—Shearling ram.—The prize of 15 sovs. to Mr. W. Simpson, of Kirby Grindalyth, Sledmere, Yorkshire.

Class 2.—Shearling ewes.—The prize of 5 sovs. to Mr. W. Simpson, of Kirby Grindalyth, Sledmere, Yorkshire.

PIGS.

Judges of small breed—Messrs. Ellison and Kemp. Judges of large breed—Messrs. Claydon and Elliott.

Class 1.—Boar, large breed.—The prize of 5 sovs. to Dr. Hobson, of Park House, near Leeds, Yorkshire.

Class 2.—Boar, small breed.—The prize of 5 sovs. to Mr. R. Smith, of Givendale, near Ripon, Yorkshire.

Class 3.—Sow, large breed.—The prize of 5 sovs. to Mr. T. Smith, of Hoyland Hall, near Barnsley, Yorkshire.

Class 4.—Sow, small breed.—The prize of 5 sovs. to Mr. Mark Stainsby, jun., Lady Pit Lane, Hunslet, near Leeds, Yorkshire.

COMMENDATIONS.

SHORTHORNS.

In Class 1, the judges highly commended Mr. Ambler's bull, Mr. Bates's bull, and Mr. Tod's bull. The following were also commended, viz., Mr. Maynard's bull, Mr. Stewart's bull, Viscount Hill's bull, Mr. Hall's bull, and the Earl of Harewood's bull.

In Class 2, the judges highly commended Mr. Thompson's bull, and Mr. Weatherell's bull. The following were also commended, viz., Lord Feversham's bull, Mr. Ferguson's bull, and Mr. Knowle's bull.

In Class 5, the judges highly commended Mr. Smith's heifer.

HEREFORDS.

In Class 1, the judges commended Mr. Price's bull.

In Class 2, the judges commended Mr. Perry's bull, and Mr. Walker's bull.

In Class 4, the judges highly commended Mr. Williams's heifer.

DEVONS.

In Class 1, the judges commended the Earl of Leicester's bull.

In Class 2, the judges highly commended Mr. Turner's bull.

In Class 3, the judges commended the Hon. Dudley Pelham's cow, and the Earl of Leicester's cow.

In Class 4, the judges commended Mr. Bond's heifer, and Mr. Hole's heifer.

In Class 5, the judges commended Mr. Turner's heifer.

LEICESTERS.

The judges highly commended Class 2 generally.

HORSES.

In Class 1, the judges highly commended Mr. King's stallion. The following were also commended, viz., Mr. Brown's stallion and Mr. Reed's stallion.

In Class 2, the judges highly commended Mr. Wright's stallion.

In Class 3, the judges highly commended Mr. Bell's stallion. The following also were commended, viz., Mr. Marshall's stallion, and Mr. Setterington's stallion.

In Class 4, the judges highly commended Mr. Douglas's mare and foal. The following were also commended, viz., Mr. Foxton's mare and foal.

In Class 5, the judges highly commended Mr. Skipworth's filly.

LONG WOOLS.

In Class 1, the judges highly commended Mr. Large's ram. The following was also commended, viz., Mr. Handy's ram.

In Class 2, the judges highly commended Mr. Large's ram.

PIGS.

In Class 1, the judges highly commended Mr. Eddison's boar. The following were also commended, viz., Mr. Martin's boar, Mr. Pusey's boar, and Mr. Newton's boar.

In Class 2, the judges highly commended Mr. John Roper's two boars.

In Class 3, the judges highly commended Mr. Eddison's sow, Earl Fitzwilliam's sow, Mr. Smith's sow, and Mr. Williamson's sow. The following was also commended, viz., Mr. Rinder's sow.

The judges commended Classes 2 and 4 generally.

EXTRA STOCK.

HORSES.

The judges highly commended Mr. Charles Timm's mare. The following was also commended, viz., Mr. George Wood's mare.

CATTLE.

The judges highly commended the Earl of Carlisle's bull calf, Lord Feversham's short-horned cow, and Mr. Thomas Bates's two short-horned cows. The following were also commended, viz., Mr. John Bowes's Argyle cow, Mr. Thomas Bates's two short-horned heifer calves, and Mr. Henry Bentley's Alderney bull calf.

PIGS.

The judges commended Mr. George Swann's 3 sows, Mr. J. Robinson's boar, Mr. Charles Jackson's sow, and Mr. M. Cartwright's sow.

LOCAL PRIZES.

SHORTHORNS.

In Class 3, the judges highly commended Mr. J. M. Hopper's cow, and Mr. Richard Booth's cow.

HORSES.

In Class 1, the judges highly commended Mr. G. Holmes's stallion. The following was also commended, viz., Mr. W. Walkington's stallion.

In Class 2, the judges highly commended Mr. W. Burton's stallion. The following was also commended, viz., Mr. W. Hodgson's stallion.

In Class 3, the judges highly commended Messrs. T. and H. Smith's stallion. The following was also commended, viz., Mr. P. Ramsdale's stallion.

In Class 4, the judges highly commended Mr. T. Richardson's stallion. The following was also commended, viz., Mr. W. Hansill's stallion.

In Class 5, the judges highly commended Mr. T. C. Hinck's mare and foal. The following was also commended, viz., Mr. Joseph Wilkinson's mare and foal.

In Class 6, the judges highly commended Mr. H. Eligie's mare and foal.

After the announcement of the prizes the meeting almost immediately broke up.

THE TOTAL AMOUNT OF PRIZES.

	£.	
Total amount of general prizes viz.:—		1845
Short-horned cattle	165	
Herefords	165	
Devons	165	
Cattle of any breed	85	
Horses	135	
Sheep (Leicester)	120	
Ditto (South Devon)	120	
Ditto (long-woolled)	120	
Pigs	80	
* Implements (not exceeding)	350	
† Reports, essays, &c.	340	
Total amount of local prizes viz.:—		450
Short-horned cattle	80	
Horses	210	
Sheep (Leicester)	20	
Ditto (long-woolled)	20	
Pigs	20	
† Reports, essays, &c.	100	
Grand total		£2295

* The actual sum directed to be awarded to implements, according to the schedule, was £245. But, in addition, the Council were empowered to award such sum as they might think proper for the invention of any new implement, the general direction being that in the whole the sum awarded should not exceed £350. Under the head "miscellaneous awards," the judges had also twenty silver medals placed at their disposal.

† The general and local prizes offered for reports and essays on various subjects amounted together to £440, viz., £50 for the best report on the farming of the North Riding of Yorkshire; £50 do. East Riding; and £50 do. West Riding—total, £150, from the £450 subscribed by the Yorkshire Agricultural Society. On the farming of Gloucestershire, £50; do. Devonshire, £50; for the best account of the management of cattle, £30; for the best report on the use of lime as a manure, £20; for the best essay on the management of grass land, £30; for the best account of the best mode of managing hops, £20; for the best essay on the management of farm horses, £20; for the best essay on the cultivation of hemp, £20; for the best report on pleuro-pneumonia, in cattle, £50—total, £290, out of the funds of the Royal Society.

The local prizes were confined to parties only who occupy either a house or land within the county of York, subject to the general regulations. Animals competing for these local prizes were, however, entitled to be shown for any of the general prizes of the society for which they were qualified, provided a special entry to that effect had been duly made as prescribed.

PROFESSOR SIMONDS'S LECTURE.

On Wednesday afternoon a lecture on the subject of calving and lambing was delivered at the De Grey Rooms, by Professor Simonds, of the Royal Veterinary College. His Grace the Duke of Richmond occupied the chair. The lecture was illustrated by coloured diagrams on a large scale; and, as in their absence much of the lecture would be unintelligible to the general reader, we shall confine ourselves to an outline of the Professor's remarks. He commenced by saying that he presumed no argument was needed to prove the importance of the subject, either to the practical breeder or to those whose interest was more immediately identified with the feeding and rearing of native breeds of cattle. It was a matter which came home to them all; being intimately connected with their agriculture, and therefore with their national prosperity. Englishmen might well be proud of their improved breeds of flocks and herds; which were at once the boast of Britain and the envy of the world. But they might ask, how often had their hopes been destroyed and their exertions lost in their attempts to improve their breeds of cattle, by the casualties that attended them in their birth: their essential to success was a knowledge of the principles to which he had alluded, and which would form the basis of his discourse. In such a dilemma science came to their assistance, and offered a ready and willing helping hand to combat difficulties and guide through danger. It was not his intention to enter on the disputed question, as to what were the best modes to improve the breed of any particular class of animals; but he might be allowed to make a few passing observations on what was called the practice of breeding. Breeding, with a view to improvement, might be said to be founded on nature's established law, that like produced like. This was only true in part, for there was constant tendency to change, arising from a variety of causes; such as domestication, living in a different climate, or on a different kind of food. The management to which animals were subject had its influence. While those might be looked upon as the chief causes in operation to produce this constant change, at the same time they were means (added to others) which were used to effect an improvement. In order to improve the breed, there were two plans, advocated by two sections of practical breeders. One was commonly called the "in-and-in system," the other the crossing plan. The in-and-in system originated from Mr. Bakewell, and it had had at least the effect of destroying the prejudice which had existed against breed from animals having a relationship. But this system had a tendency after a time to deteriorate the breed; in fact, it might be said to be limited so far as its benefits were concerned. Every improvement of breed required the application of the same means to retain it which produced it; the chief of these was care in the selection of stock, so as to avoid a tendency to hereditary disease. Crossing was founded on a principle just as secure as Bakewell's principle of care in selection, added to the in-and-in system. Certain diseases were hereditary, and so was colour, and they could only get rid of this colour and this predisposition to disease by crossing. Still,

this crossing required care in selection. Mr. Simonds illustrated this peculiar tendency to propagate disease or defects by referring, at some length, to the fact of the large proportion of horses in Yorkshire known as "roarers." Animals bred from these "roarers" had a peculiar susceptibility to the disease, and if one of these Yorkshire horses was exposed to the ordinary causes of disease, the peculiar defect would be found developed, while other horses similarly exposed would escape. What was true with regard to horses is as true in regard to cattle, sheep, and all domesticated animals. The tendency of *like to produce like*, Mr. Simonds illustrated by referring to the results of crossing various breeds of cattle, such as Devons with Herefords, both the colour and form of the parent animals being thereby altered or modified. In a state of nature the tendency to change was not observed to the same extent as in domesticated animals; therefore in a state of nature degeneration of a thing did not take place to the same extent as among the same breed when domesticated. The lecturer then passed on to remark upon the importance, in crossing animals, of suiting the male to the mind or taste of the female. Some might smile at this notion, but Mr. S. showed, by several facts, the importance of paying attention to this point. Professor Simonds then came to the two main divisions of his subject, namely—1. The structure of the organs principally concerned in the reproduction of the species; and, 2, The principles by which they should be guided in cases of difficult or protracted parturition. On the first head he observed that every part of the body has to be perfected; and as the perfection of all and every part depended upon the amount of pure blood which that part received, it was necessary that the blood, which went to the extremities, and the blood which went to the head, should be alike in purity; that there should be, in fact, no impure blood circulating through the fœtus. In young animals there were certain vessels for the equal distribution of the blood, that were not met with in adult animals. The period of utero-gestation, or length of time that the fœtus is detained in the uterus, depended upon a variety of causes and differed in nearly every animal. The mare carries the young 49 weeks, the cow 40, the sheep 32, the bitch 9, and the pig 16 weeks. Was it not astonishing that impregnation should take place and the fœtus developed and perfected in the short space of nine weeks? If they descended into the scale, and looked into other animals, they would find it was effected much earlier. When the fœtus was fully perfected it was expelled from the womb, or in other words labour took place. Now, unless the uterus possessed capabilities for throwing off its burden, abortion could never take place. Birth or labour, therefore, did not depend upon the full development of the fœtus, nor did it depend upon the capability of the fœtus to live independent of the mother. Every one would be acquainted with the fact that there was a mysterious effect taking place from the causes of impregnation which at a certain time ended in the birth of the young. This was always associated with a train of appearances or symptoms which denoted the condition of the animal at a particular period. In the first place, the animal became restless, and separated herself from the herd. She lay down and rose up again. This was associated with intermissions of pain, which were called propulsive or "bearing down," continuing with more or less force for a certain length of time. The time that the pain continued of course depended upon a variety of causes; first, upon the freedom with which the mouth of the womb dilated itself, for during the whole period of utero-gestation, the young animal was as it were enclosed in a box, which had to be opened before it could escape. The opening of this was always associated with pain, and here he would remind all proprietors of animals not to be in too great a hurry with animals at the time of parturition, although the animals may express great pain. He had known many cases where valuable animals had been lost in consequence of the impatience on the part of the proprietors, in seeking too soon to give their assistance to the mother (applause). He had also known cases where these symptoms of approaching parturition had passed off, and not returned for two or three days; for it did not follow that when the mouth of the womb was opened, when everything was prepared for the expulsion of the young, that the animal should pass through. Therefore, he would again say, do not be in too great a hurry, especially with cows and ewes, for very frequently labour was extremely languid. The lecturer proceeded to point out the various cases of preternatural delivery which it was necessary to provide for. The position of the fœtus in a perfectly natural delivery was that in which the fore legs and the head protruded simultaneously; but there were many deviations from this position, which rendered the act of delivery a matter of great difficulty, and requiring the greatest degree of caution on the part of the operator. Sometimes the head came first, whilst the fore legs were doubled up in the womb; at other times, the head was bent down or turned backwards; and, in some cases, the hinder part presented itself first. In adjusting the head, the most convenient instrument to be used was a hook. Many persons entertained great prejudices against using hooks; but without reason, for they might easily be constructed in such a manner as to cause no injury to the mother. The head being got within reach, the hook should be placed within the orbit. A hook with a joint fixed to an iron rod might be used more efficiently than a hook attached to a line, because, being introduced together with the arm of the operator, it could be either pushed forward or drawn back by the assistant, and the hand of the operator having ascertained the position of the orbit, could readily, by means of the joint, effect an attachment with the orbit. The lecturer next referred to a presentation which he remarked was one of a very difficult character indeed; and that was one in which the hinder part first presented itself. The object in this case must be to reverse the legs, which may be accomplished, though with some difficulty, by introducing a line by means of a rod, and passing a line around each of the legs in succession. In many cases, delivery might be effected without having the fœtus previously adjusted; but it was desirable to adjust the fœtus, if possible. In other cases, mechanical resistance was offered to delivery. One of these cases was dropsy, or water belly, in the fœtus. When the head and forelegs came forward readily, and still resistance took place, that resistance must be referred to the unnatural size of the fœtus. In this case the fœtus ought to be at once sacrificed; because, were it delivered alive, it could be scarcely expected to survive many days. To destroy the fœtus in this case, a stillet in a metal sheath should be introduced into the womb. The fœtus being penetrated by the stillet, the instrument should then be withdrawn from the sheath, which thus became a tube, through which a sufficient portion of the fluid would escape to enable the fœtus to be withdrawn without difficulty. Another case of mechanical resistance arose from the enlarged size of the head. In this case the operator must introduce his hook with one hand and attach it to the orbit, and with the other operate upon the head with another instrument, so as to reduce the size of the head to such a degree as to enable it to be drawn out without difficulty. The lecturer next pointed out the precautions necessary to be used in preventing an inversion of the uterus. With regard to the medical treatment to be used in cases of this description, bleeding and physic had been recommended. That would be a proper treatment if they wished speedily

to sacrifice the life of the animal; but the best course would be to administer diffusive stimulants and sedatives. Nothing was so good as opium for the purpose. The learned professor, after a few general observations, concluded by thanking the audience for the patience and attention with which they had listened to his lecture.

The Hon. Mr. WILSON proposed a vote of thanks to Professor Simonds for his able lecture, which having been duly seconded, was put to the vote, and carried by show of hands, amidst general acclamation.

The audience then separated.

THIRD DAY.—THURSDAY.

On this day the Cattle Show was visited by 25,732 persons. In the early part of the day the tickets were exhausted: about 1,200 were admitted by paying money at the door. On Tuesday 1,113 persons were admitted; on Wednesday, 6,066; and, on Thursday, 25,732; making in all 32,912, for the period spoken of. By far the greatest proportion came in with the half-crown tickets; whereas, formerly, from one-third to two-thirds only have been admitted, and the remainder at one shilling each.

THE PAVILION DINNER

Took place on Thursday afternoon, at four o'clock, in the Great Pavilion erected in St. George's Field, and was attended by a company numbering 1200—a company as distinguished by rank and as important in character as it was imposing in number. Every seat was occupied, and the demand for tickets was far greater than could be supplied. The company began to arrive shortly after three o'clock, and before the hour appointed (four), the pavilion was full, and nearly all the company were seated. The scene was a most magnificent and imposing one. The Earl of Yarborough, the President of the Society, occupied the chair, and the Earl of Chichester, the President-Elect, the vice-chair. His Royal Highness Prince Albert, and the other distinguished guests, were welcomed with applause on their entrance.

The Stewards for the dinner were:—

HIGH TABLE.

The EARL of YARBOROUGH, President.

VICE-PRESIDENT'S TABLE.

The EARL of CHICHESTER, President-Elect.

STEWARD OF THE PAVILION DINNER.

SIR JOHN V. B. JOHNSTONE, Bart., M.P.

STEWARDS OF THE TABLES.

A
Robert Blyth Harvey
C. Hillyard

B
Marquis of Downshire
William Fisher Hobbs

C
John Evelyn Denison, M.P.
Richard Garrett

D
Sir Thos. D. Acland, Bart., M.P.
Stephen Grantham

E
Thos. Wm. Bramston, M.P.
Humphrey Brandreth

F.
John Walbanke Childers, M.P.
John Bell Crompton

G
John Ellman
Anthony Hamond

H
Hon. Robt. Henry Clive, M.P.
Colonel Austen

I
Hon. Capt. Henry Howard
William Henry Hyett

J
Sir Francis Lawley, Bart.
Rt. Hon. W. G. Hayter, M.P.

K
Sir Charles Lemon, Bart., M.P.
Richard Milward

L
Sir Robert Price, Bart., M.P.
Professor Sewell

M
Duke of Richmond
Samuel Jonas

N
Lord Portman
John Bennet Lawes

O
Lord Southampton
Earl of Egmont

P
Philip Pusey, M.P.
William Shaw (London)

Q
Sir Matt. White Ridley, Bart.
George Turner

R
Hon.Cap.Dudley Pelham,R.N.
Jonas Webb

S
Thomas Raymond Barker
Charles Barnett

T
Wm.Shaw, jun.(Northampton)
Earl of Leicester

U
Robert Aglionby Slaney, M.P.
Henry Stephen Thompson

V
Samuel Bennett
John Booth

W
W. R. Crompton Stansfield, M.P.
Henry Wilson

X.
John Villiers Shelley
John Kinder

Y
Colonel Challoner
John Hudson

THE PAVILION

In which this great dinner took place was erected in St. George's Field, a spacious piece of land belonging to the Corporation of York, and situated between the high road to Selby and the very beautiful and fashionable promenade, called the New Walk, "made," says Drake, under the date of 1730, "a year or two ago, at the expense of the city."

The Pavilion, like the buildings at the showyard, was erected by Mr. Manning, of London. There were six entrances to the pavilion, one in the rear, adjoining the New Walk, reserved for the chairman and his immediate supporters, who occupied an elevated platform, erected along the side, extending some yards both ways from the centre. Immediately opposite was another elevated platform of corresponding dimensions, for the vice-chairman and his supporters. There were three other entrances to the body of the pavilion for the general company. Between the elevated platforms eleven tables were placed in rows, with seats on each side, and ample space between for waiters; on either side of these, and skirting the ends of the platform, were seven tables, rising gradually towards each end of the pavilion, with seats on one side only, so that the company looked towards the chairman and the centre of the pavilion. The pavilion was 140 feet long by 84 feet deep, and was capable of accommodating 1,400 persons comfortably, though the contract for the dinner was for only 1,200. The floor was boarded throughout, and the whole of the tables and seats were supported by wrought-iron tressels.

With this introduction we proceed to give a full report of the toasts and sentiments proposed, and of the speeches delivered on this interesting and important occasion.

On the right of the President were Prince Albert, the High Sheriff of Yorkshire, Chevalier Bunsen, the Hon. E. Bancroft, American Minister; the Marquis of Abercorn, Earl Fitzwilliam, the Earl of Sheffield, the Earl of Feversham, the Earl of Egmont, P. Pusey, Esq., M.P., the Earl Powis, Lord Waterpark, Sir Geo. Phillips, E. S. Cayley, Esq., M.P., J. G. Smyth, Esq., M.P., T. Hildyard, Esq., M.P., Jonathan Parkes, Esq., and Viscount Morpeth. On the left were the Right Hon. the Lord Mayor of York, the Belgian Minister, the Earl of Zetland, the Earl Fortescue, Lord Wharncliffe, Geo. Hudson, Esq., M.P., Viscount Ingestrie, M.P., Lord Geo. Bentinck, M.P., Mr. Ald. Thompson, M.P., the Hon. O. Duncombe, M.P., Lord Beaumont, Sir J. P. Boileau, Bart., H. Monckton Milnes, Esq., M.P., Sir Tatton Sykes, Bart., the Rev. A. Huxtable, M.A., Professor Way, Captain Stanley Carr, and Professor Johnston.

The CHAIRMAN: Your Royal Highness and Gentlemen—I feel that I ought to inform you, that after the dinner of the Royal Agricultural Society, the Council arrange the toasts which shall be proposed, and it is un-

derstood by the rules of the society, that no person whose name does not appear on the list can be permitted to speak on the present occasion (cheers). You will, I am sure, expect that the first toast shall be that which, unless it was proposed would create a universal feeling of discontent (loud cheers). I shall, therefore at once, inform you that I have now to propose to you "The health of the Queen—(loud cheers)—and that her Majesty may long live in the enjoyment of every domestic happiness; and that she may live to see the realization of her constant, earnest wish—the welfare, the contentment, and the prosperity of her subjects." (Loud and long-continued cheering.) The toast was drunk most enthusiastically.

The CHAIRMAN—Your Royal Highness and gentlemen—The next toast which I have to offer to your notice is the "Queen Dowager, Prince Albert (immense cheering), Albert, Prince of Wales (cheers), the Duke of Cambridge (cheers), and the rest of the royal family" (cheers). It is, I am sure, gentlemen, quite unnecessary for me to remind you of what I have myself seen at this and other public meetings, and which you and the people of England always do feel, that they owe to the Queen Dowager an acknowledgment for the various and useful charities which she aids (cheers). It has also been a gratification to observe that the royal family have ever conducted themselves in a most pointed manner in encouraging and condescending to attend meetings convened for the purpose of enabling the rich to contribute to the wants of the sick and the needy (cheers). When we find that to be the case, we in England feel a satisfaction and security that the rising members of the royal family will be brought up in such a manner as to secure for them the esteem and respect of all England (cheers). Upon ordinary occasions this toast has been received with marked enthusiasm, but I am sure I only second the wish of this society and those who are now present, when I say that we do feel greatly honoured (loud cheers) at having been visited on this occasion both by his Royal Highness Prince Albert (loud cheers), and also that another governor of the society, who indeed was one of the first promoters of it—His Royal Highness the Duke of Cambridge—has also been at this show, at York (loud cheers). He was obliged to leave York early, but not until he had been through both yards. He inspected both the implement yard and the cattle yard, and expressed himself delighted with the exhibition on this occasion. His Royal Highness Prince Albert visited the show yard shortly after his arrival in York. Yesterday he examined minutely the stock exhibited, and so anxious was he to see what had been done by this society, in the way of improvement, that he again visited the show field this morning at six o'clock (cheers). He was engaged for two hours in inspecting the implements, and he was also pleased, as a governor of this society, to show that he has come here, not merely to see the show, but to evince the deep interest he takes in this meeting, by again attending the ground when it was most thronged with the members; and therefore his Royal Highness, although he must have felt somewhat fatigued, was pleased to pay a second visit to the yard, in order that he might gratify the members afterwards present (cheers). And I need not remind you that one of the great objects of this society has been to lead the country to know, that it is not merely for the benefit of the farmer that it holds these meetings, but that it wishes sincerely that the condition of the labourers may be bettered (cheers). I cannot remind you of that without asking you if you do not believe with me that the country was perfectly electrified with the speech which was made lately by his Royal Highness, when he was advocating the claims of the labourer? (loud cheering). Under all these circumstances, then, I have the satisfaction of proposing to you the health of "The Queen Dowager, Prince Albert, Albert Prince of Wales, the Duke of Cambridge, and the rest of the royal family" (loud and long continued cheering).

His Royal Highness PRINCE ALBERT rose to acknowledge the toast, and was received with loud and reiterated cheers. He said: Gentlemen, I have been most deeply touched to witness the expressions of your loyalty to the Queen (renewed cheering), and to the members of the Royal Family generally (more cheering). I beg to return you my best thanks for having received the toast of my health with so much cordiality (cheers). It has been a great satisfaction to me to have been enabled this year to pay you an old debt (cheers)—in thus coming amongst you, and attending at this most useful and interesting meeting (loud and reiterated cheers). All I have seen to-day and yesterday exhibits a bright picture of the progress of British agriculture; and for much of that progress the country is, I firmly believe, indebted to this society (cheers). Agriculture, which was once the main pursuit of this like every other nation, holds even now, notwithstanding the development of commerce and of manufactures, a fundamental position in the realm (cheers). And although time has changed the position which was once held by the landed proprietor with his feudal dependents, yet the country gentleman with his wife, and the country clergyman, the farmer, and the labourer, form still one great, and I hope united family (cheers)—one united family, in which we gladly recognize the foundation of our social state (cheers). Science and mechanical improvements have changed the mere practice of cultivating the soil, in these days, into an industrial pursuit, requiring capital, machinery, skill, and perseverance in the struggle of competition (cheers). We must consider this a great progress, as it demands higher energies and higher intelligence (cheers). Conscious of these changes, we agriculturists of England (tremendous cheering) collect in these meetings—the meetings of the Royal Agricultural Society of England—in order to communicate to each other the result of our various experience, and the progress that some may have made in the application of science, in the improvement and ingenuity of machinery, or in the breeding and rearing of cattle (cheers). Feeling, as I do, a high and lively interest in these noble pursuits (cheers), and having myself in a small way (renewed cheering and laughter), experienced all the pleasures and little pangs (cheers), and knowing its paramount importance to the country (cheers), I feel highly gratified that the President of the Society should have entrusted to me to propose to you the toast of the day, which is, "Success to the Royal Agricultural Society of England." I trust you will respond to it with enthusiastic cheers. Gentlemen, "The Royal Agricultural Society of England, and success to it."

The toast was responded to with loud cheers.

The CHAIRMAN again rose, and said: Gentlemen, I beg now to call upon Earl Fitzwilliam to propose the next toast (cheers).

The Right Hon. Earl FITZWILLIAM then presented himself amidst loud and continued plaudits. He said, My Lord Yarborough and gentlemen, I am sure that I shall only consult your wishes, and also the wishes of his Royal Highness, who has done us the honour to be present on this occasion, if I call your attention to the toast which after the one you have so enthusiastically received, will, I think, appear to you, as it does to me, next to devolve upon your attention. Gentlemen, we are honoured on the present occasion not only by the presence of the Consort of our Sovereign (loud cheers), and through him, as it were, with the presence of royalty itself (renewed cheers), but we are honoured also by the presence of other nations, which by their ministers here

present testify to the utility of this society, and which through them express their desire for the continued prosperity of this empire (loud cheers). And gentlemen, it has indeed once been said by some ill-omened voice, that ambassadors of other nations are like spies upon the conduct of those amongst whom they reside (cries of no, no). Gentlemen, I say it is an ill-omened voice by which this has been expressed (hear, hear). I look upon the representatives of foreign nations in a very different light. I look upon them not as a means by which foreign nations are to act as spies on the conduct of their neighbours, but by which they are to strengthen and cement the friendship of each other (cheers). I look upon the ministers of foreign states as golden links in that great net work of society amongst a great and civilized nation—not the great work of European society merely, for I am reminded by the near presence of my honourable friend, Mr. Bancroft (the American minister), that civilized society is no longer confined to Europe, but that it embraces the largest portion of the world (loud cheers). I think it a proud circumstance that we are honoured by the presence of the representatives of three great foreign powers (hear, hear, and cheers). I have alluded to my honourable friend, Mr. Bancroft, who, in illustrating the history of his own country, has added so largely to the literature of the world, and obtained for himself a distinguished niche in the temple of British literature. I may also refer to the minister of the Belgian monarch, by whose presence we are also honoured on this occasion; and not only the uncle of that person, but that the head of a government which like us, flourishes in free institutions, which are bound together and cemented by that royal head which reigns over them (applause). Did I say reigns over them? I say reigns *with* them (cheers). For I say that his Majesty, the King of Belgium, reigns with his subjects. Of that we have had within no long period satisfactory demonstration. And then, gentlemen, when I have passed to the other side of the chair, I return again to this side of it, and see also near me my excellent friend, Chevalier Bunsen (loud cheers), whose name recalls to every man who has the slightest knowledge of English, I should rather say of European literature, a connection with those bright names, the names of Niebuhr and of Arnold. I say, gentlemen, whether we look at the fact of these three persons being the representatives of foreign nations with whom we are connected, or whether we look to the individuals themselves, we may well rejoice at being honoured with their presence, and it will ill become us, not to pay them the tribute of wishing them health and prosperity (loud cheers). I now call upon you, and I am sure you will respond to me, to drink the health of the Foreign Ministers who have graced this meeting with their presence (cheers). The toast was drunk amid loud cheering.

The president then called upon

His Excellency M. Van de Weyer, the Belgian Minister, to respond, who was received with much enthusiasm, and spoke as follows:—Your Royal Highness, My Lords, and Gentlemen,—In rising to return our most sincere thanks for the honour which you have conferred upon us, and for the manner in which this toast has been received by you, I ought to apologize and to express my regret that the task is not in better and more competent hands. However, gentlemen, when a foreign minister speaks before an English audience, somehow or other the kindness with which he is received (loud cheering) makes him feel almost, I should say, more at home than if he speaks in his own native language before his own countrymen (applause). It would perhaps appear ingratitude, national and personal, in me, if I confined myself to merely thanking you for the honour you have conferred upon me, as the representative of a country where agriculture has been the making and the saving of us (loud cheers)—of a country where efforts in that line have always met in this country with the most unbounded praise. It would indeed be personal ingratitude in me, because, gentlemen, I have the honour which has been conferred upon me, not for my personal merits, but as the representative of that country, of being an honorary member of your society (cheers). Belgium has an old debt to pay to England. There is no country where our practical efforts in agriculture have been exposed in more scientific, clear, and able treatises than in England. It is now two hundred years ago since an English ambassador has written and published a tract which, translated into Flemish and French, is still a sort of manual in our country. I wish I could return the compliment to the ambassador, and expose to my own country the wonders of which I have been a witness this day (loud applause). The links which united Belgium to this country have been interrupted by long and disastrous wars. We have had foreign conquerors and foreign armies that have overrun our country; but even under the yoke, under the domination of foreign countries, there was something that kept hope at home and respect abroad. We kept, gentlemen, those two arts—the one which sustains life, the other which embellishes it—which represent Flemish husbandry and Flemish art. As soon as national independence was again acquired by the instrumentality of those hands who held the plough, we returned again, and we looked up to England for experience. We found that practical agriculture is a good thing, but could not be separated from scientific agriculture; and we thus immediately borrowed from England every improvement that has been made successful in this country (loud cheers). I very well remember the very first English bulls that landed on our shores from England. It was not the particular enterprise of individuals who began it. It was the Government—the King—who, having a personal knowledge of what he had seen in England, brought us to introduce these improvements into our country. The arrival of these bulls was a sort of public *fête*, which was announced in the public gazette, the *Brussels Gazette*, and were sent into the provinces under the superintendence of the Government, and officiated as public functionaries (loud laughter and cheers). There is another institution which I am happy to say we have adopted and imitated from you, which is this very society, upon whose rules the identical society has been established in Belgium. After having been a witness of the advantages of this society, which unites in its members the royal Prince, the landlord, and the tenant, when we see them communicate their ideas, improve their minds, and warm their hearts together, it is impossible for a practical people, and allow me to add a loyal people (loud and continued cheering) not to follow such an example. I have the satisfaction to announce that within six weeks we shall have in Brussels the first meeting of the agriculturists of Belgium. I hope, gentlemen, that we shall soon have international meetings (applause), and that all the nations of Europe shall be for once convinced that it is much more advantageous for them and for the progress of civilization to compete in cattle than in battle (loud cheers), and that, in showing to one another our fields, we shall be proud to show, not the number of men that can be killed and slain upon them, but the number and the quantity of bushels of wheat that can be raised upon them (continued applause). We, gentlemen, as diplomatists, are not perhaps useless implements to achieve this. It was said formerly that an ambassador was sent to *lie* abroad for the good of his country. We have now, gentlemen, a better and more noble task to fulfil. We are sent to

cultivate friendship and amicable relations, to sow the seeds of good feeling, so that nations may reap the harvest of peace with security (cheers). I did not intend to make anything like a speech; but you have cheered me on, and we all know the influence of cheers upon the loquaciousness of man. I find, however, it is high time that, in the name of my colleagues and myself, I should return our most sincere thanks for the honour you have conferred upon us (loud cheers).

His Excellency Chevalier BUNSEN also responded to the toast. He said: Gentlemen, my honoured senior colleague has expressed so eloquently and forcibly those feelings of grateful acknowledgment which inspire us—my honoured colleague and myself—in consequence of the kind invitation with which we were honoured, and of the enthusiastic reception with which we have been met here, that I have nothing to do, in order to express those feelings in my own name, and in the name of my country (cheers). But still, gentlemen, as I have been kindly called upon to add a few words to the expressions of my honoured colleague, allow me to say that I now look back with pride to the moment when, nine years ago, in this pavilion, I was invited by you to speak to you in this meeting (cheers); and I am certainly gratified to see now that those sentiments which I then expressed for the prosperity of this empire, as intimately connected with the prosperity of this society, have been most richly fulfilled (cheers). At that time I said to you that I was convinced, when looking about this society, and seeing the feelings of loyalty—the feelings of cordial union between the landlord and the tenant—between the gentleman and the farmer, that I saw before me one of the most solid bases of the greatness and power and prosperity of this great empire; and I added at that time, and allow me to say it again now, that the peace of the world depended most essentially upon the power, and the greatness, and the truthfulness of this great country (cheers). It gives me the greatest gratification to be able to say that the common fatherland of Germany appreciates equally with yourselves, the importance of agriculture, its fundamental importance in the present position of the world in particular (cheers). Allow me to introduce a living example as to our own agricultural meetings. During the last seven or eight years there have been in many parts partial agricultural societies, which had not exclusively the progress of agriculture for their object. Last year, however, a great society was established for that purpose, and men from all parts went in order to meet each other to accomplish the object in view. That meeting was held in Austria, and who was president on the occasion, but a Prince, who, not being satisfied with the political state of his country at that time, retired, and applied himself to the study of agriculture, and was chosen as the president of that great assembly of farmers. And who was that Prince but the same man who has now been called, by 45,000,000 of Germans, to be Regent of that Empire (cheers)? If we wish to be second to none in this respect, we must wish also to be second to none in our love for peace, for it is only in peace that agriculture can flourish (Hear, hear). Thus you see we wish to tread in your footsteps. And this recalls to my mind some words which I have noticed in this great city. I allude to a banner which I observed floating in the air, bearing words allusive to Her Majesty, and expressive of the wish that she may long reign over a free and happy nation (cheers). Well, then, I feel sure that so long as this happy union exists between all those occupied in agriculture—between the landlord and the tenant and the yeoman—so long as that exists, and societies like yours flourish, so long will this be a free and happy nation, and I am sure it will be so, so long as you feel thankful for it being so (loud cheers).

There were loud cries for "Bancroft," the American Minister, whereupon

The CHAIRMAN rose and said,—If gentlemen will have the kindness to look at the list of toasts, they will find that we have not forgotten his excellency Mr. Bancroft. The council were not ignorant of the popularity of his excellency among the farmers of this country, and therefore they have selected his excellency to propose a toast later on in the evening (applause). I hope gentlemen will support me in keeping to the established rule of the society (hear, hear), and that they will allow me now to call upon Lord Fortescue.

Lord FORTESCUE immediately rose, and was received with loud applause. He said,—The toast which I have been invited to propose is, "Agriculture, Manufactures, and Commerce" (cheers); and if the acceptation of that toast had depended upon the power or ability of the speaker, to give effect to the various important considerations which it involves, I should have shrunk abashed from the task. But where, gentlemen, are the claims of manufactures likely to be more freely admitted, and more cordially acknowledged, than by this great and enlightened assembly of the agriculturists of England (cheers)? And in what place can we be more impressed with the union of all these great interests in promoting the prosperity of the people and the wealth of this empire, than in the capital city of this great county of York, containing, as it does, within its varied surface, specimens of all the most successful efforts of these three great branches of British industry (cheers)? Yorkshire! comprising within its bosom the varied manufactures of the West Riding—the shipping and commerce of Hull—and the fair and fertile fields of Holderness and Cleveland (Renewed and loud cheers). If therefore I cannot reasonably claim your attention, I will at least endeavour to merit your indulgence, whilst I state very shortly the few plain and homely truths which seem to me to bear upon this toast (applause). We have been told by writers that the strength and durability of a country is derived less from the abstract perfection of its laws than from the manner in which the people combine to administer to the general welfare and to the maintenance of truth, order, and peace, throughout the realm; and how well this was marked by that fact of which we lately had so striking and touching an example (cheers), in the manner in which all classes of the community, the poorest and the humblest, as well as the highest and the wealthiest, stood side by side, in defence of the supremacy of the laws and in support of the institutions of the realm (cheers). And as it is, gentlemen, with the institutions of our government, so I believe it to be with the various elements of our social condition, by which these institutions are supported. Each in their respective walk, agriculture, manufactures, and commerce, furnish employment to those classes whose capital is their labour (hear, hear), and each, in its particular sphere, gives to those individual classes the means of attaining, at a cheaper and more reasonable rate, the necessaries, and I hope I may add, every day, in an increasing degree, the comforts, of civilized life; and so may they always regard one another with sisterly support and sisterly affection (cheers), may they march together, side by side, in the increased application of science and skill to each of their several callings, and in their endeavour to promote the moral and social and intellectual improvement of the working classes in their employment (cheers). Thus, by their common union, may our favoured land, under the blessing of Divine Providence, continue to advance in the prosperity of each of these important branches, based on the security of our free and constitutional liberties, and strengthened by the helping hand and by the common good-will of

all classes within her Majesty's dominions (cheers). I beg leave to propose to you

"Agriculture, Manufactures, and Commerce" (cheers).

Lord Feversham next rose, at the call of the noble Chairman, and was greeted with loud cheers. He said the duty had devolved upon him of proposing the next toast, which was one, he was sure, that would come home to the hearts of every gentleman present, viz., the "Health of the Lord Mayor and Corporation of the City of York" (Loud cheers). Distinguished as were those eminent persons for their hospitality, their munificence, and their patriotism, he should at all times feel the utmost confidence that the proposal to drink their health at a large meeting of their fellow-countrymen would be received with the utmost cordiality and most unqualified approbation—(cheers)—and in a more especial manner would it be considered that a unanimous expression of honour and of gratitude was due to them for their zealous co-operation and valuable assistance upon this occasion of the Royal Agricultural Society of England holding its anniversary meeting for the first time within the county of York (cheers). The great success which had attended this meeting had already been alluded to, and was the subject of sincere gratification, he doubted not, to every individual present; and although all those who had taken an active part in conducting and in presiding over the proceedings of this meeting were entitled to their most cordial acknowledgments, at the same time it would not be denied that a great portion of the success was justly to be attributable to the valuable assistance rendered by the civic authorities on this occasion, some of whom were in possession of considerable landed estates, and all of them he doubted not took a deep and sincere interest in the advancement of agricultural science, and in the promotion of this great branch of national industry, feeling that the welfare of all classes of the community was essentially and inseparably identified with the success of British agriculture (Hear, hear, and cheers). It was unnecessary for him to remind the assembly that by the rules of the society politics were entirely and most wisely excluded (Hear, hear). He hoped therefore that no gentleman whom he had now the honour to address would be desirous for one moment to depart from the rule, nor would he permit any little consideration to influence his proceedings or bias his judgment in any proceeding connected with this great national Society (Hear, hear). But he might take leave to observe that it was a most gratifying circumstance, and one for which we could not be sufficiently thankful to the all-wise Creator of the universe and the Disposer of all human events, that amidst the storms and tempests which had been raging about us—amidst the subversion of dynasties, the tottering of thrones, and the crumbling of empires—in this great country we all remained secure—(great cheering)—that the meeting and associating together, from the prince to the peasant, their only desire being to uphold the institutions of the country, and to promote, to the utmost of their ability, every source of national industry—(Hear, hear, and cheers)—and that amidst those storms and tempests this great nation had stood unshaken and unmoved, and had cultivated harmony and native industry (Loud cheers). He had now the honour of proposing the toast which he had already named, namely, "The Health of the Lord Mayor and Corporation of the city of York," convinced as he was that every gentleman present would receive the toast with the warmest cordiality, individually and collectively, and with a hearty desire for the welfare of that important community over which they so worthily presided. (The toast was drunk with cheers).

The Lord Mayor, for the honour which the assembly had done the corporation of the ancient city of York, begged leave to tender his most grateful acknowledgments. It had been a source of pride and gratification to the inhabitants of the city that the Royal Agricultural Society of England should upon this occasion have done them the honour to visit the city (Hear, hear). The accommodation that they had been enabled to afford them, though not all that the corporation had wished, he hoped had not failed to be somewhat agreeable to the council of the society (cheers). The city of York took a deep and lively interest in agricultural affairs. It was surrounded by an agricultural population. The honour that had been done them upon this occasion had been greatly enhanced by the visit of his Royal Highness (cheers). He had pride and gratification in saying, in the face of the farmers of England, that his Royal Highness and his beloved Queen lived warmly in the affections of the inhabitants (loud cheers).

The Duke of Richmond rose, in obedience to the call of his noble friend, to propose a toast for the acceptance of the company; but prior to doing so he asked permission, in their name, and in the name of the farmers of England, to assure his Royal Highness that they felt the high compliment of his presence, and they felt it to be a high compliment that he had gone through the show-yard when the farmers were then assembled (loud cheers). He was happy to say his Royal Highness had an opportunity of visiting the show-yard, but I am more happy (continued the noble duke) in showing him here present a sample of the English farmers (loud cheers). He (the Duke of Richmond) felt personally most grateful to the Council of the Royal Agricultural Society, that they had, upon the present occasion, made him the organ to communicate to the Yorkshire Agricultural Society their best thanks for the liberality which they had evinced towards them, and for the kindness which they had received from the Yorkshire Society (Hear, hear). He thought that the splendid exhibition which they that morning witnessed in the show-yard was an ample proof of the great advantage which this society had been to the district (Hear, hear). Many of them were not perhaps aware that the Yorkshire Agricultural Society had only existed for ten or twelve years, and that they counted in the list of subscribers now nearly 800 members. *En passant*, permit him to say that no society for the improvement of agriculture could be efficient unless it was supported by the practical farmers of England (Hear, hear). He was not one of those who would rise there and advise them to pay no attention to theory or to science, but he asked them to test it by practical experience (Hear, hear). He felt that, without local societies, they, the Royal Agricultural Society of England, would be but of little service; but thought they had been of some, as they had turned the attention of the owners and occupiers of land to the great importance of agricultural improvement. He thought one of the great principles which the Yorkshire Society had advocated, and he must say that he thought it one of great importance—they were not selfish, if they were they would not be worthy of the name of Yorkshiremen (cheers). They extended in the pages of their journal, through the whole breadth and length of the land, the result of those successful experiments which had been tested by practice. After the eloquent speeches which had been made that evening, he felt that he had no right to trespass upon their attention (cries of "Go on"). But he did feel they were deeply indebted to Sir John Johnstone and the members of the Yorkshire Agricultural Society. Now great improvements had been made in agriculture, and thousands and thousands—he might say millions—of acres had been drained, in addition to other agricultural improvements. Great prejudices had also been swept away; but still much remained to be performed. They would excuse him if he spoke in the

body of the hall of what he believed to be the opinions of the landed interest of this country (applause). He thought their fields ought to be much larger than they were (laughter). He thought their hedge-rows should be much diminished (applause). That irrigation should be more extensively applied; and he believed they ought to prevent the waste of their manure as heretofore. In addressing a body of farmers, he felt he ought to join, and he could only say he was but too eager to join with them in persevering to promote improvement in agriculture. He well knew the kindly feeling which existed in every part of the country between the landholders and tenants. He knew that they were a body which, if they put their shoulders to the wheel, they could improve agriculture; and this he wished because he would improve a great branch of the national industry, upon which the weal or woe, the peace, contentment, and welfare of millions of millions of our fellow-subjects depended. Perhaps now they would think he ought to resume his place; but he could not do so without expressing the feelings of a grateful heart for the manner in which they received him when he arose (applause). It must be gratifying to every man to receive marks of approbation from any respectable body of men; but how much more must he feel it when the compliment was made by so large and influential a meeting, composed of brother landlords, and honest straightforward tenant-farmers—(cheers)—that class for which he, as an individual, had ever entertained feelings of the greatest respect and regard, and in whose ranks he could number many personal friends. He thanked them from his heart for the reception which they had given him upon the present occasion; and he wished them and theirs every blessing which this world can bestow (loud cheers).

Sir John Johnstone, on rising to respond, was received with applause. In acknowledgment of this toast he wished all the members of the Yorkshire Agricultural Society to stand up. Occupying, as he happened to do this year, the office of president of that society, it was his duty to return, on the part of the Yorkshire Society, their most grateful thanks for the way in which the noble duke had proposed the toast for the acceptance of the meeting, and for the cheering manner in which it had been received by the assembly. He must confess that when he assumed that office, he wished they could have given a more competent welcome to the advent into the Yorkshire district of the Royal Agricultural Society. That society, he believed, had many claims upon the confidence and support of the country, and it ranked among its supporters all classes of the community, from the illustrious consort of the Queen (cheers), who was the first farmer in England, down to the humblest agriculturist who tills the soil. (Cheers.) On the part of the Yorkshire Agricultural Society, and, if he might be allowed on this occasion to represent the Yorkshire agriculturists, he would give them such a welcome as a Yorkshireman ought to give. It was true that the Yorkshire Society had no independent existence this year; but if they had merged their object with that of this society, it was to establish the claim of the Royal Society upon public confidence—it was only for the benefit of that great society. The influence of the Yorkshire Society only extended over the province, whilst the Royal Society had its work over the broad surface of England's soil. (Cheers.) If their feeble star (the Yorkshire Society) had been obscured on that occasion by the brighter and greater luminary which was now before them (the Royal Society), he believed they might have contributed in some small degree to enable it to shine with greater warmth and greater splendour in the atmosphere in which they now resided. The funds which the Society for Yorkshire had contributed towards this meeting had, however, been returned in a two-fold degree; for not only had the Royal Society shown its generosity in the shape of local prizes, but by the visit of the society to this district, he believed it would be the heartfelt pride of Yorkshiremen to acknowledge this work of the society's regard, as it had been the means of bringing together the most splendid assembly that was ever seen in this city. (Applause.) He believed that there had never been seen before such a numerous collection of symmetrical animals, and such a large show of mechanical ingenuity as had been exhibited this week. (Loud applause.) They had got for their proportion of the prizes rounds of beef, and he was glad to observe that the Yorkshire hams were not likely to fall in price, Mr. Pusey having paid £20 for one pig out of the yard. Then as to adequate compensation. He might say that generally when met together the farmers in this riding were superior to the common local societies. The farmers of this neighbourhood were accustomed to meet together in this riding, and knock their heads together for some time. Now they had an opportunity of coming into amicable and useful collision, and he hoped that the result would be—comparing their own practice with those of Norfolk, Lincolnshire and Bedfordshire, they would be able to give and receive instructions, and he thought they would be expected to do both. It was quite true that the lines of railway did not run through the best soils (laughter and applause). If they had, the gentlemen present would not have travelled so cheaply as they had done. They were not to take such land as a fair specimen of Yorkshire farming; but they should rather visit the Wolds of Yorkshire, and they could find that they had been long famous for their short-horns; and he could assure his excellent friend Mr. Pusey that he could show him on the Wolds some as good farming as on the Brocklesby estate itself. First of all, that we may hold up to less favoured districts those parties who do honour to the country; and if he might be allowed to give the names of those who had been instrumental in the advancement of agricultural science, he would place in view Sir Tatton Sykes (applause). He had said that he could point out to them many specimens of good farming, and that, through the medium of their society, the standard of farming had been raised throughout the county. These results had been published through the medium of their journals; and by these means they hoped to disseminate universally those suggestions upon practical farming which had been supported by the noble Duke (Richmond) at the bottom of the table (hear, hear). Having registered those suggestions, and taken steps to obtain the performance of them, so as to secure all their advantages, and place agriculture on a sound and systematic basis, they had, he was proud to say, found themselves not altogether without success (hear, hear). They had found a constantly increasing number of subscribers uniting themselves to their society, which now numbered 800 members; and they had also done something towards benefiting the agriculture of this country. The price of draining tiles had been reduced, and a cheaper and more efficient system of drainage had been introduced. Generally a much more extensive and more economical use had been made of the farm-yard manure, and the other manures brought in aid of the manure of the farm-yard (hear, hear). They formed a large accession of farmers' clubs—those useful auxiliaries of agricultural associations; and many of their members had united for the purpose of forming a yeoman school for the county, which they did hope to find the nucleus for forming in young farmers a sound and useful education, and for imparting to them the knowledge by which they were hereafter to earn their daily bread. He would trespass very little more, and would only shortly say, that if a small and individual society like that over which he presided might dare to

hold such language to so great and flourishing a luminary as the Royal Society undoubtedly was, he hoped that the good feeling which had hitherto subsisted between the two societies, and from which they had derived the greatest advantage, might long continue. The noble duke who had preceded him had mentioned the diversity of knowledge imparted through the medium of their journals; and in referring to them he could not avoid mentioning the name of Lord Spencer, their first president; nor could he mention that revered nobleman's name without saying that he would not have accepted the presidency, if he had not been sure that their societies would not have been conducive to the welfare of agriculture generally. Strong as was that revered nobleman's feelings upon this subject, they were not more sincere than his own (Sir John Johnstone's); and he trusted that both the Royal Agricultural Society of England and the Yorkshire Agricultural Society would hereafter be found contributing to the objects for which such societies were established (hear, hear). And, gentlemen, when, in the course of years, the Royal Agricultural Society shall again visit Yorkshire, he trusted that they would find their own good example, and the valuable suggestions of the noble duke, carried out; and that, proud as they now were of their feeding and their culture, they would then have greater cause for self congratulation (hear, hear). Cordially agreeing with the noble duke who had given them such valuable suggestions, he would reiterate the opinion that they should throw down many of their fences (applause). There might be some fault found with some parts of their country; but if they could get into other districts he could name, they would not find their fields small or overfenced. However, as he had already said, when that great society did return at some future period, they would perhaps meet with a more efficient, but not a more sincere welcome than that with which the Royal Agricultural Society had now the honour to offer them (loud cheers).

Lord Wharncliffe then rose and said that the noble President had called upon him to propose a toast, which he believed would not be deemed the least important or the least acceptable to that assembly. He felt it to be no little distinction to stand before them on that occasion —an assembly comprising and representing that great branch of the industry of this country—the agriculture of Great Britain (loud applause). He stood there in the presence of great capitalists, of great landowners, of men of science and of long and extensive practical experience; but of what value would all that be, of what use to the efforts of that society itself; and how could they hope to attain the great object to which their exertions were directed, if they had not the command of the energy and activity of those whose intelligent industry would enable them to accomplish all those things—the labourers of this country? (Hear, hear, and cheers.) He felt convinced that there was not one member of that great society who would not sympathise with the sentiment which he had to propose to them, in calling upon them to express their interest and sympathy in the prosperity of the labouring classes of this country (cheers). They all felt that the labourers of this country were not only essential to the pursuits which they were met to promote, but also that they constitute the great bulk of the population of this country, therefore their interests should be their primary consideration. But while saying this, he did not wish to flatter this class by telling them that their interests were paramount to those of all others and must be alone considered. It was not worthy to make such an assertion, and the working classes were too sensible to receive such flattery with any other feeling than that of the utmost, the most intense suspicion and distrust (hear, hear). The working classes of this country were not so ignorant of the feelings of those above them as to need declarations that they were prepared and anxious to give them justice; nor was it expected on their part that equality should be preached at every street corner, or that Albert *ouvriers* should be placed over them (hear, hear). They did not look in England to visionary commissions for the impracticable organization of labour—the parent of cruel delusion and unnatural and desperate exasperation. That was not the way for English gentlemen to show their interest in the welfare of the working classes. Nevertheless, they felt most deeply interested in the welfare of the working classes (hear, hear). There was not a man present but would feel the force of what he was about to say, namely, that it was incumbent upon all who wished to profit by the successful pursuit of industry, to consult the interest of those by whom it was to be carried out (cheers). Upon an occasion like the present, the term "Labouring Classes" must be taken to mean the agricultural labourers; but as had already been stated, they were resident in a county which included in its population a large number of labourers who were not connected directly with agriculture (hear, hear). His own lot had been cast amongst those who were connected with manufactures rather than with agriculture; and therefore they must not blame him if, for a moment, his attention was directed to that class of the labouring population (hear, hear). The manufacturing labourers were not placed in the open and beautiful country, following invigorating employments, and breathing a pure atmosphere; but they were confined, it was very well known by many persons, within narrow walls while employed, and resided in the dark and murky lanes of densely populated towns. All must feel how hard their lot must be; and he could not forbear on that occasion expressing his admiration of the conduct of the labouring classes of these districts, especially within a recent period (applause). When they looked at the aspect of the world at that moment, at the confusion existing in all quarters, at the doctrines which had been preached—that the working classes had only to upset the existing system, in order to have positive influence and command over all governments; and when they knew also that there lay upon that class the pressure of severe distress, calculated, above all things, to induce them to give ear to the nonsense which had been preached to them—it was matter of admiration in all other classes to see the steady loyalty—(hear, hear)—the good faith, and the good sense with which the working classes had acted (loud cheers). That result might be ascribed by some persons to one cause, and by others attributed to another influence; but he believed that much was to be ascribed to the sensible, calm, reflective character and good sense instilled by the institutions amongst which they lived, existing amongst and characterizing the British labourer; and which made him, in spite of high wages, the cheapest labourer in the world (applause). They would recollect that although that society was established for the promotion of agriculture, yet its objects were not limited to the mere application of science to the culture of the fields; but it was essential to the prosperity of agriculture that the welfare of the labouring classes should be maintained (applause). And he trusted that this society, and such of its members as were present, would never cease to recollect that it was one of the first duties as it was the highest interest of every man connected with agriculture, or connected with the land of this country, to advance the moral, social, and intellectual position of the labouring classes. He therefore proposed "The labouring classes of this country" (drunk with three times three).

Mr. Pusey, M.P., in a complimentary speech, proposed the health of "The President," which was drunk with all the honours.

The PRESIDENT said it was no affectation on his part when he told them that he felt unequal to return them thanks for the manner in which they had received his health. He was not, they knew, as Mr. Pusey had said, a stranger to the farmers—(hear, hear)—but he was a stranger in this locality. Of this he felt that he had but one object in view with regard to the farmer, and he had never spared his own time, his health, or his strength, in his behalf (cheers). He had done so from no selfish motive, but because he conceived that the interests of the state require the well-being of the farmer. (cheers). Mr. Pusey had referred to some exertions he (the President) made some years ago in regard to that which had since become acts of parliament for enclosing land. They who knew what the management of land was, could hardly be aware of what he had to meet with by opposition to those measures (hear). He was told that it was against the interests of the poor man, whereas he had always contended that it was to his great benefit (applause). He hardly knew whether he should thank them altogether because he was their president. He could not help feeling that it was not altogether from the manner in which he might have considered himself as their president that they had so received him, because many of them must be aware that it was not to the president, but to the council that they ought to feel obliged for having made regulations for the well-conducting of this great and important society. He must ask their indulgence whilst he stated that he saw with the highest gratification (and he would assure those then around him, not only with gratification but with pride) that not only had a numerous body of his tenantry come to welcome him here, but he saw also those from North Lincolnshire, who were unconnected with him entirely but by old friendship and acquaintance with him, and he should be a hypocrite if he did not tell them that he believed that they had not only come to see the show, which the conveniences of this ancient city afforded them an opportunity of doing, but to pay him a compliment (cheers). He had endeavoured, as their president, to act as he thought their president should do at their anniversary meeting. He had had no difficulty in doing so, because he had found most zealous servants of this society—he had found most active stewards of the different departments, and active directors of the show (cheers). There had been one general wish on the part of those connected with the society, to show that they really and heartily feel that not only was it important that this society should show, in such a county as York, what a magnificent society this was, but that they should convince the farmers, from all parts of England, that this society was to do a great and universal good (cheers). That this society had done good he thought that there could not be the least doubt. Look, for instance, at their first agricultural meeting, when they had twenty-three implements entered for the show; they had at this meeting upwards of 1,500 implements shown (loud cheers). They had seen, also, gradually year by year, not only that the implements had increased in number, but they had increased in utility—they had also been made better for the use of the farmer (applause). Not only had they been exhibited, doubtless to those who had not known the difficulty the farmers had to contend with, but to those who could judge of the merits of implements, and it required skill and mechanism to enable the farmers to get through their difficulties, and if they would successfully compete with their neighbour they must not grudge a few pounds. They must recollect that nothing was so bad as a cheap article if it was badly made. He might, however, perhaps be allowed to tell them (he did so as a friend) that he thought they would make a mistake if they did not impress upon the members of the society that the great object with regard to stock at their exhibitions was not only to show good animals, but to be enabled to perpetuate their race. He believed he was perfectly justified in saying that if they brought the animals too fat to these shows, they might be prevented from obtaining any progeny even from a clever animal. He mentioned this because, although it was the duty of the judges to weigh all those considerations, if they agreed with him they would not only try to prevent their animals becoming too fat at the future meetings, but that they would carry to their respective counties the general opinion of this society that this error (and error it was) which was so generally practised, should be abandoned—that they would endeavour to turn over a new leaf, and show a wish to have an animal at the future exhibitions of the society to obtain a premium, and assist those who came after them in keeping up the character of England in her breed of cattle (cheers). He had only now to assure the meeting that he had felt it a great honour to have been elected their president. He hoped they would believe him when he said that he should consider it his duty to the society, to the farming public in general, and to the interests of the country, to attend the society's meetings, to endeavour to bring up gentlemen to give their time, and to consider the different propositions that might be laid before the Council, to prevent it being said what was very often well meant, that it was a more theoretical than practical society (cheers).

Sir FRANCIS LAWLEY, Bart., in proposing "The judges of the show," briefly referred to the arduous duties which they had to perform. The toast was drunk with the honours.

Mr. CHAPMAN, of Stoneleigh, acknowledged the compliment in a humourous speech.

The PRESIDENT said he had now to ask them to drink to the success of two other important agricultural societies, one a very old one, having been established between sixty and seventy years, and numbering between 6,000 and 7,000 members, a number equal to that society (cheers). He gave "The Highland and Agricultural Society of Scotland, and the Royal Agricultural Improvement Society of Ireland" (cheers).

The Hon. the Marquis of ABERCORN, on behalf of the Royal Highland Society, begged to offer their acknowledgments for the honour they had done them, and for the cordial manner in which their names had been mentioned. Although the Highland Society could not lay claim to the great array of names and wealth which distinguished this association, she might claim to herself the merit of having trodden a somewhat rough and rugged path with great success. If he was to say that the difference between Scotland as it now was and what it was forty years ago, was mainly to be attributed to the exertions of the Highland Society, he should not exceed the truth (applause). Before he sat down he trusted he might be allowed, on behalf of the Highland Society, to say that, inferior as they were to the Royal Society of England in wealth and influence, yet they were in no way behind in those feelings of loyalty and devotion (loud cheers) which had been so enthusiastically called forth and responded to that day; and that the example of their illustrious guest, in promoting this peaceful science, which tended to draw those classes together, whose interests it were ever to unite, and who could not be disunited without common injury to both (cheers), that his example would be as gratefully and as cordially appreciated in Scotland as it had been by that assembly (loud cheers).

Earl FORTESCUE acknowledged the toast, on behalf of the Royal Agricultural Improvement Society of Ireland.

The CHAIRMAN next called upon the American minister for a toast.

Mr. Bancroft rose to comply with the request, and was most enthusiastically received. He said, Your Royal Highness, My Lord Yarborough, and Gentlemen, I esteem it a distinguished privilege that you have called upon me, on the present occasion, to propose a sentiment, which will be responded to most warmly from the heart of every one in this numerous assembly. (hear, hear.) Gentlemen, I thank you all for the very cordial manner in which you have welcomed me to-day. (cheers.) I esteem it not as anything personal to myself, but as an evidence on the part of the farmers of Yorkshire that you too, like the farmers of every other part of England, which it has been my lot to visit—that you too cherish the sentiment of friendship and regard for that other nation beyond the Atlantic (loud cheers)—of that other nation where Chatham's language is the mother tongue. But let me seize the opportunity to express my grateful sense of the cordial welcome which I in connection with others have received in Yorkshire. The invitation of your president brought me on a pilgrimage to this far famed, and world-renowned valley of Mowbray, to this land of abbeys; and I in common with others can testify that if the old monasteries are crumbled to the dust, the spirit of hospitality still survives and has lost nothing of its strength (cheers), and to what an entertainment have we been invited! We assemble at the base of the most stupendous monument ever reared by the genius, the delicate taste, and the religious sentiment of our ancestors. (Loud cheers.) And it has been so carefully restored and preserved by their pious zeal for their posterity: and, indeed, it seems as if centuries descended round about to welcome this living and moving panorama of the industrious of the English of to day—it seems as if centuries of the past welcomed the results of your farming husbandry—results which it would be presumption to compare to the snow-white bulls which of yore grazed the pastures of pagan Rome. You yourselves, coming together from all parts of England to witness the exhibition here made—you yourselves, farmers of the country, are astonished as you contemplate the stock that is exhibited, and in seeing what can be produced by the skill, the emulation, and the perseverance of the British farmer. (Cheers.) Nor may I omit to add my mite of admiration of the wonderful results of ingenuity in the yard where the implements have been shown, and which have been accomplished by the workmen of this ingenious nation, enjoying the blessings of liberty without restraint (loud cheers)—and living in a climate which for all you may say of it, is one of the very best in the world. It is surpassed by no climate in its averting the excesses of heat and cold, and being on that account above all things friendly to industry. (Loud cheers.) And I, too, as I came here, must add my sentiment of joy in my presence here, as bringing with it a reminiscence of home, for on the other side of the Atlantic we love the cities we establish and the towns we plant—we love to give to our villages that mark the line in which the English language proceeds towards the Pacific, names that remind us of our ancient home. (Cheers.) A beautiful emporium of American commerce, to the city that boasts more than any other in prosperity, that gems the ocean side—that binds together the two hemispheres, and takes for its name that of this city, but it is a *new* York (cheers), where people are not likely to forget the ties of consanguinity (hear, hear). And thus I am led by the manner in which you assent to these sentiments of friendship, to congratulate myself and to congratulate you, that we live in an age when nations exult in the prosperity of one another (great cheering). I rejoice that we live in an age when, of all the trees that are planted in the ground, the husbandman of all lands invokes the choicest blessing of Providence on the tree of peace (cheers); praying that its root may strike to the very centre of the earth, and that it may be firmly rooted, that its boughs may but rustle in the breeze of the stormiest revolutions (loud and reiterated cheers). It is with this sentiment and this feeling I stand before you to-day. The kindness of your president has favoured me with a toast; but I do not, in putting myself forward as diplomatist, speak as a privileged spy (laughter). I can only say that any one who comes, from any quarter of the world, to spy out the nakedness of the land of England, will have to go home again for his pains. He will find nothing but an united people—(loud cheers)—he will see nothing but a nation that loves English liberties, and is determined to maintain and advance them under the influence of judgment and reason, as conducing to the general prospects and public weal (loud cheers). He will see nothing but society in the finest arch in which the keenest eye can detect a crevice. And I, gentlemen, speaking as an American—I, gentlemen, speaking as a representative of my country, tell you that we rejoice in your prosperity (cheers). I should be denounced by my country if I did not utter that sentiment (loud cheers). I tell you that the greatest delight I have had in this my happy visit to this far-famed valley—this wide, rich, vastly extended valley, which has not its rival till you pass the Alps and come upon the valley of Normandy; I tell you the greatest pleasure I have had in this visit is to see that everywhere fruits of your industry are likely to be rewarded—to see everywhere your teeming valleys promise you a redeeming harvest, before which the sorrows of the past year, which I too witnessed, will pass away like the shadow of a summer's cloud (loud and long continued cheering). I think I have in my eye the architect of the bridge over the river Conway. I shall say, then, in reference to the industry and perseverance of the English people, that their prosperity is assured; it is like the beautiful famed bridge over the Conway, which, by the heaviest burthens that can be imposed upon it, does not bend so much, but that the first gleam of heaven's sunshine restores it to its true level (cheers). And now, gentlemen, that I have shown to you my sympathy in your occupations and pursuits, you will allow that the president has not done wrong in giving me the distinguished honour of proposing the health of your president elect (cheers). I shall not attempt to pronounce his eulogy, for there are cases, were you to speak the praises of another, might be deemed an arrogant presumption. In his presence the voice of truth might, too likely, be interpreted as the language of eulogy. In the name of the society I say, in making the selection of the succeeding president, the voice of the electors fell upon the Earl of Chichester not merely because he was a landowner—not because he dwelt upon his estate among his own people, but because he has known how to secure to himself the esteem and affection of all farmers of his neighbourhood (cheers). I therefore invite your Royal Highness, you, Lord Yarborough, and you, gentlemen and farmers, to join with me in a hearty cheer as we drink the health of the president elect of the Royal Agricultural Society of England (loud and long continued cheering).

The toast was then drunk with loud applause.

The Earl of Chichester, in responding to the toast, said he cordially thanked them for the honour they had done him in drinking his health. He must be allowed, in the first instance, to express to his excellency who had so kindly and eloquently proposed the toast, and those hearty cheers and gratulations with which he was received, were not merely the expression of courtesy and approval, with which he must naturally listen as the eloquent representative of, he would not say a foreign, but a sister nation (applause). Those expressions were the honest and warm sentiments of their hearts (loud cheers). He felt they had conferred on him

a very great honour in electing him president of that association. He felt that he had no claim upon them for the honour, but in his humble endeavours to discharge the duties of the office, he trusted he should receive the support which such a situation ought to receive (cheers), more especially when they called to mind the number of the distinguished predecessors that had gone before him, with whom it had been his happiness to be acquainted, and whom he had endeavoured to support in the discharge of their duty. He would endeavour to discharge his duty as president, as well as those who had preceded him, by attending patiently and constantly to the interests of the society, supported as he should be, by those zealous friends who constituted the council (applause). He hoped he might be indulged on this occasion, when he stated to them that he was somewhat more than a half-bred Yorkshireman (cheers). It was his privilege to be one of the original members of this society, and he had, from its commencement, taken a great interest in its prosperity, because he believed its exertions were calculated to confer great benefit on agriculture, and on society at large. He had always looked with great interest on the period when the meeting of the society would be held in this district. He did so, because he knew that this great county combined a large measure of that industry, intelligence, and application for which this country was distinguished beyond all others (applause). When he looked to the exhibition in the yard, and that most important discussion on the previous evening, which was of so practical and useful a character, or considered the great honour which yesterday and that day they had enjoyed by the presence of that illustrious personage, who had honoured them with his company, together with that eloquent and able address which he had delivered, and which was so much in unison with the principles of the society (applause), which he trusted would ever continue; when he considered these prominent features of the society, he felt justified in saying it was worthy of the success which had attended it (applause). He now begged to propose the toast which had been confided to him—"The Railway Companies, and thanks to them for the facilities they have afforded to the Society." The noble Earl concluded with a merited tribute to Mr. Hudson.

George Hudson, Esq., M.P., rose to respond to the last toast, upon which he was vociferously cheered. He said it was a difficult task to offer the grateful thanks of a grateful heart, for the kind manner in which the toast, which had been proposed by the noble chairman elect, had been received by the assembly then before him. If the rules of the society had permitted a deviation from the rule laid down by the noble chairman, he (Mr. Hudson) would have asked that the distinguished, the honoured, and the valued friend, who sat next to him, should have returned thanks for the compliment that had been paid to an interest with which he (Mr. Hudson) was so intimately connected (cheers). It was quite true that he (Mr. Hudson) had been one of the implements in the hands of the master architect, and he might have been of use occasionally in carrying out the noble designs and ingenious imaginings of his (the architect's) noble mind, but it was to his honoured and valued friend to whom the public were indebted for the accommodation that had been afforded them during the present meeting. It was to that indomitable spirit of perseverance, under disadvantages and discouragements, which would have sunk the heart of many a man—the spirit and perseverance possessed by his noble friend—to which they owed the success and the facilities which they had enjoyed in visiting that city on such an interesting and important occasion (cheers). He thought they (the railway company) would not have discharged their duty in a becoming manner, or carried out that intention which Parliament, in conferring upon them such great powers, had contemplated, if they had failed to act upon the great principle of doing all in their power to afford accommodation to the country at large (cheers). And it was a high gratification to him, representing an amount of capital greater perhaps than was ever committed to a single individual before, that in that intelligent assembly, amidst his countrymen and his fellow citizens, and amidst his farming neighbours who were, as well as the nobles of the land, that he was permitted to bear testimony to the faithful manner in which the railway interest of this country had endeavoured to carry out the great wishes suggested by the wisdom of Parliament (applause). There was not a toast which had been given that evening with which railways might not be associated (applause). He considered it an honour conferred upon that national society to have a visit from his Royal Highness Prince Albert (cheers). And doubtless the invitation to pay that visit was the more readily complied with when his Royal Highness found that he could be wafted to this loyal city, and could have an opportunity of witnessing the great loyalty which existed here, by a means of transit so infinitely superior as that afforded by railways (cheers). He (Mr. Hudson) had always taken a deep interest in everything connected with agriculture (cheers). He sprung from a tenant farmer (vociferous applause)—a tenant farmer, who, to many then present was perhaps not known, but nevertheless, one whose successors were well known as a tenant farmer, who with his ancestors, lived for two centuries without a lease, or anything beyond the honest performance of their duty; and he was proud to say that the family from which he had descended had lived for upwards of two centuries within twelve miles of this ancient city upon the same farm (loud cheers). And he would be unworthy of the loins from which he had sprung, if he were to forget on any occasion to endeavour to support and promote the prosperity of agriculture (renewed approbation). He might state, too, that he took a deep interest in the original intention of the Council of the Society to visit this ancient city. When he (Mr. Hudson) first appeared before the Noble Duke, who had been so enthusiastically received by the company then assembled, to represent the city of York, then holding, as he did, the office of Lord Mayor, he was far from failing to discharge his duty faithfully towards those whose interests he had the pleasure of upholding, as the noble duke, he was quite sure, could bear testimony. He then promised that every thing, as far as human foresight could extend, should be done to make the visit of the Royal Agricultural Society agreeable and pleasant to them. And he knew that he spoke for a loyal, well ordered, and an hospitable city (cheers). He might venture, also, to add the hope that the result of those promises had met the entire approbation of the society's warmest friends. He would now beg to offer his most grateful thanks for the compliment which had been paid to the interest which he represented, and he wished to assure the meeting that wherever the society's meeting might be—or at all events as far as the next meeting was concerned—he hoped it would be his pleasure to be again amongst them; and presiding as he did over the railway which next year would be called into operation for the purposes of the society, he now begged to assure them that every facility should be used to make the next meeting as agreeable as this had been (applause). An honoured friend of his had remarked, in the course of the evening, that the Yorkshire railways did not pass through the best cultivated parts of the country; and another friend of his had expressed to him the same opinion. But he (Mr. H.) invited that gentleman to visit him at his residence a few miles from York, feeling assured that his friend would be constrained to acknow-

ledge that the cultivation of that district was equal to that of any other part of the kingdom. And if any gentleman was unconvinced of the fact that as good farming existed in Yorkshire as in any part of the world, let him take a trip upon the railways of the North and East Ridings of this county, and assuredly he would find as good farming—aye, and as honest a tenantry—as existed throughout the whole world (great applause). He. (Mr. H.) heard with great satisfaction the very beautiful observations that fell from the lips of his friend Mr. Bancroft. He could almost have wished that that gentleman had been the last speaker of the evening, and that the company had departed after hearing those beautiful tributes to our nation, and those friendly and lofty principles which he had advocated (applause). He (Mr. H.) as an humble citizen of York—a city in whose welfare he took a deep interest—a city to which he came friendless and unknown—a city in which he had prospered, and in reference to which he would be most ungrateful if he did not, so long as he lived, do all in his power to promote its interest—could assure that gentleman who had addressed them in so beautiful a manner, that if at any time he should be addressing his friends at New York he might take the warm aspiration of Old York, and say that the inhabitants of that ancient city cherished one unanimous wish for the welfare of their (the American) country, and the hope that it would be crowned with glory. Mr. Hudson then sat down amidst loud and protracted applause.

The CHAIRMAN then rose and said: I wish to express to his Royal Highness Prince Albert the great joy that he has diffused amongst the members of this society by coming amongst us on this occasion, and showing that he is not indifferent to our transactions; and we earnestly, but respectfully, hope that it will be convenient to his Royal Highness again to visit this society. I may perhaps be allowed to add, that it has been a great gratification to me that I was the first president who had the honour of receiving his Royal Highness as a participator in our proceedings.

PRINCE ALBERT then rose and gracefully bowed his acknowledgments to the company, and was loudly cheered for some minutes.

His Royal Highness and the rest of the company then withdrew at twenty minutes before nine o'clock.

In the concluding remarks upon this great national show, the *Yorkshire Gazette* says—

And now we come to a very pleasing fact, as showing the extent and importance of the present meeting, and confirming the discretion and judgment of the Council in deciding upon York as the place of meeting. The Society was last year deeply indebted to the principal railway companies throughout the kingdom, who most handsomely conveyed, free of charge, both to and from the show, all stock and implements entered for exhibition at Northampton. The Council, however, being sensible of the serious inconvenience which might possibly arise to the several companies from the abuse of this privilege, resolved, on their next application, to solicit, in the case of implements, a free passage only to the show, while for the live stock intended for competition they asked, as before, for a free transit in both directions. In order to check the entry of stock or implements for the ordinary country meetings of the Society, and their specification in the printed catalogues, as well as the unnecessary expense of a preparation of space for their exhibition in the show-yard, when such stock and implements were either not intended at the time of entry to be sent to the show, or have been withheld upon insufficient grounds, the Council resolved to inflict certain fines, according to the amount of head of stock, or the value of the implements so entered. Notwithstanding these restrictions, the Council had the satisfaction of stating, at their meeting in May, that the number of agricultural implements entered for the York Meeting exceeded that of any former year—that the entries of live stock then made for this exhibition were very numerous—and that they had every reason to hope, from the favourable circumstances under which the York Meeting would be held, the meeting in that city would be inferior to none that have preceded it. The consequence was that the area of the show-field had to undergo two enlargements, in order to provide for the reception and exhibition of by far the largest number of implements, and (within seven) the greatest amount of stock ever entered for the show, as proved by the following comparative schedule of entries from the commencement of the Society:—

Year of Meeting.	Place.	Entries of Stock.	Entries of Implements.
1839	Oxford.	249	23
1840	Cambridge.	352	36
1841	Liverpool.	319	312
1842	Bristol.	510	455
1843	Derby.	730	508
1844	Southampton.	575	948
1845	Shrewsbury.	437	942
1846	Newcastle.	613	735
1847	Northampton.	459	1321
1848	York.	724	1508

CATALOGUE OF IMPLEMENTS

EXHIBITED AT THE SHOW.

HENRY CLAYTON, of 21, Upper Park Place, Dorset-square, London.

Two patent double-action hand-working machines, for the manufacture of draining pipes, draining and other tiles, and bricks, invented, improved, and manufactured by the exhibiter; Clayton "Cycloidal" (or improved Essex shape) draining tools, with polished or ordinary black blades, improved and manufactured by the exhibiter (these tools were awarded the prize at the Royal Agricultural Society's meeting at Northampton, in 1847); plans (working drawings to scale) for the erection of kiln, sheds, &c., for tile works, invented and manufactured by the exhibiter.

JOHN SHEPARD, of West Haddon, near Daventry, Northamptonshire.

A waggon, invented, improved, and manufactured by the exhibiter.

JAMES WILMOT NEWBERRY, of Hook Norton, near Chipping Norton, Oxfordshire.

A seven-rowed dibbling machine (this machine was exhibited at Northampton last year, and gained a prize of £15); a five-rowed dibbling machine (gained a prize of £10, at Liverpool, as a three-row, and £15, at Shrewsbury, as a four-row machine); a one-rowed dibbling machine; and a hand dibbling machine; invented and improved by Saunder and Newberry, of Hook Norton, and manufactured by the exhibiter, Mr. Hornsby, of Grantham, and Mr. Clyburn, of Uley.

JAMES PHILLIPS, of 116, Bishopsgate-street Without.

A case of glass milk pans, improved by the exhibiter and G. Kirkly, and manufactured by James Hartley and Co., of Sunderland; a case of glass cream pots and glass preserve jars, invented and manufactured by James Hartley and Co., of Sunderland; a case of propagating and bee glasses; and a case of sundries, manufactured by James Hartley and Co., of Sunderland.

ROBERT BEART, of Godmanchester, near Huntingdon.

A patent pipe and tile machine, for making pipes, tiles, and

soles; a patent pipe, tile, and brick machine; and (new implement) a patent land cultivator, invented and manufactured by the exhibiter.

THOMAS BIGG (late of 15, Crawford-street), of Leicester House, Great Dover-street, Southwark, Surrey.

A sheep-dipping apparatus (in three parts), invented and improved by the exhibiter, and manufactured by Charles Smart, of Oxford-street, London (the apparatus obtained prizes at the meeting of the Highland and Agricultural Society of Scotland, at Berwick-on-Tweed, and at the Yorkshire Agricultural Society's meeting at Hull, 1841).

ROBERT BLUNDELL, of 13, Thiberton-street, Islington, Middlesex.

(New implement) an agricultural drainage level, invented by the exhibiter, and manufactured by Horne and Co., of 123, Newgate-street, London.

NICHOLAS BURNETT, of Black Hedley, Northumberland, near Shotley Bridge, Durham.

(New implement) a spike roller, for reducing strong land after ploughing; and (new implement) a clod-crusher, invented by the exhibiter, and manufactured by George Emerson, of Greenhead, Northumberland.

The Executors of the late JAMES GARDNER, of Banbury, Oxford.

A patent turnip-cutting machine, with 30 knives (this machine gained the prize of £5 at the Southampton meeting, in July, 1844, exhibited by the late James Gardner, of Banbury; Messrs. Mapplebeck and Lowe, of Birmingham, exhibited this machine at the Northampton show, in July, 1847, and a silver medal was awarded to them for it at that meeting); a patent turnip-cutting machine, with 14 knives; a patent chaff-cutter, with 3 knives; and a patent chaff-cutter, with 2 knives, invented by the late James Gardner, of Banbury, and manufactured by the exhibiters.

JAMES HAYES, of Elton, near Stilton, Huntingdonshire.

A registered straw shaker, manufactured by the exhibiter.

WILLIAM NEWZAM NICHOLSON, of Newark-upon-Trent, Nottingham.

Three machines for breaking oilcake for beasts and sheep (with registered improvements); (new implement) a strong machine for breaking oilcake for beasts, &c. (with registered improvements); a very strong machine for breaking foreign oilcake for beasts, &c. (with registered improvements); and a machine for breaking oilcake for beasts, sheep, &c., and small for the purposes of tillage, invented and manufactured by the exhibiter. A mill for grinding or splitting beans; a machine for grinding beans, oats, malt, barley, &c. (with registered improvements); a machine for grinding beans, oats, &c. (with registered improvements); (new implement) a machine for crushing linseed and other small grain; (new implement) a machine for crushing linseed, malt, oats, wheat, barley, and other grain (with registered improvements); a barley awning or hummelling machine; and a winnowing or corn dressing machine, improved and manufactured by the exhibiter. A chaff engine, invented by John Cornes, of Barbridge, improved and manufactured by the exhibiter. A thirteen-inch iron land roller, seven feet long; and a twenty-inch iron land roller, seven feet long, manufactured by the exhibiter. (New implement) an improved Lincolnshire heath convertible clod-crusher, corn-presser, land or seam-presser, and general land-roller; and (new implement) a patent hay-making machine; improved and manufactured by the exhibiter. (New implement) a portable steaming apparatus for preparing food for cattle, and other purposes, the boiler invented and the rest part improved and manufactured by the exhibiter. (New implements) five cottage ranges (with registered improvements; (new implement) a farm kitchen range (with registered improvements); and specimens of copying presses; invented, improved, and manufactured by the exhibiter. A set of patent tube whippletrees, improved and manufactured by the exhibiter. A cart cover or sheet; a waggon cover or sheet; and samples of waterproof horse cloths and gig aprons; invented and manufactured by C. Mackintosh and Co., of Manchester. Samples of waterproof cart and waggon covers, manufactured by the exhibiter. Specimens of various kinds of patent galvanized iron for the construction of buildings, and for roofing, and of sundry farm utensils of the same material; invented and manufactured by Morewood and Rodgers, of London.

CHRISTOPHER EDWARD DAMPIER, of No. 2, Gloucester-terrace, Hyde Park, Middlesex.

(New implement) an improved roofing tile press, invented by the exhibiter, and manufactured by George Springall, of 14, Wych-street, Strand; a model roof, and various specimens of the patent architectural tiles, made by the above-mentioned machine.

SAMUEL NEWINGTON, of Knole Park, Frant, near Tunbridge Wells, Sussex.

(New implement) a hand dibble; (new implement) a hand dibble, for depositing every seed, together with beans; (new implement) a hand machine for drawing drills, in which seed is to be deposited; (new implement) a hand machine for stirring between the rows of growing crops; and (new implement) a hand machine for stirring, and cutting off the weeds at the same time; invented by the exhibiter, and manufactured by manufactured by Deane, Dray, and Deane, of King William-street, London Bridge.

EGERTON HARDING, of Oldsprings, near Market Drayton, Salop.

A set of pair-horse whippletrees (obtained a silver medal at Newcastle-upon-Tyne, in 1846; a prize at Leek, in 1846; a prize at Uttoxeter, in 1847); a set of three-horse whippletrees; a pair-horse cultivator (obtained a prize at Newcastle-under-Lyne, in 1845); a pair-horse subsoil plough (obtained a prize at Leek, in 1846); a one-horse cart; a harvest cart; and a light harvest cart; invented, improved, and manufactured by the exhibiter.

WILLIAM BULLOCK WEBSTER, of Houndsdown, near Southampton, and of the Office for Drainage of Estates, 48, Charing-cross, London.

A hand pipe and tile machine, invented and improved by the exhibiter, and manufactured by Messrs. Tasker and Fowle, of the Waterloo Iron Works, Andover, Hampshire; (new implement) the Ayrshire pipe machine, invented and manufactured by Mr. Brown, of Ayr; a model of a pug mill, improved by the exhibiter, and manufactured by Tasker and Fowle, of Andover, Hants; a model of a kiln, on a new construction, invented by H. Chamberlain, of Worcester, and improved by the exhibiter; models of a tile-yard, a wash mill, and crushing rollers, improved by the exhibiter; tiles and hollow bricks, made by Webster's tile machine. A level; and a beam level; invented by the exhibiter, and manufactured by G. Cox, optician, of 128, Holborn Hill. A common workman's level, invented by the exhibiter, improved and manufactured by G. Cox, of 128, Holborn Hill; a model of new patent desiccating apparatus, invented and patented by Davison and Symington, of New Broad-street, London; various articles dried by the patent desiccating process; a model, the transfer of power, applied to agricultural purposes, invented by the exhibiter.

WILLIAM BLOXSOM, of Gillmorton, near Lutterworth, Leicestershire.

A four-horse power portable steam engine; and a thrashing box or drum, to be driven by the preceding engine; invented, improved, and manufactured by the exhibiter.

ROBERT HARLAND, of Fridaythorpe, near Wetwang, Yorkshire.

A fold-yard manure and turnip drill, improved and manufactured by the exhibiter (a silver medal, value £1 10s. was awarded for this drill, after trial, at Beverley, in July, 1846); (new implement) a drill to drill pulverised manure broadcast, invented and manufacted by the exhibiter.

JOHN HODGSON, Jun., of Scampston, near Malton, Yorkshire.

An improved corn dressing machine; and an improved manure drill for turnips, 2 rows, improved and manufactured by the exhibiter.

Henry Putland, of Hurstgreen, Sussex.

A patent subsoil pulverizer, invented by John Read, late of 35, Regent Circus, and manufactured by Henry Putland, of 79, Wardour-street, London (this implement gained the Society's prize of £10, at Southampton, Shrewsbury, Newcastle-upon-Tyne, and Northampton); a wrought iron broad share and leg for the subsoil pulverizer; and a mole share and leg to attach to the said sub-pulverizer, invented by John Read, late of 35, Regent Circus, and manufactured by the exhibiter. A cast iron broad share, 24 inches wide, to attach to the said plough; a cast iron broad share, 20 inches wide, to attach to the subsoil pulverizer. A cast iron broad share, 16 inches wide; and a cast iron broad share, 12 inches wide, invented and manufactured by the exhibiter; a cast iron share, to use with sub-pulverizer, for stony land; and a cast iron subsoil share, for clay lands; and a cast iron coulter, for subsoil pulverizer, invented by the late John Read, of Regent Circus, and manufactured by the exhibiter.

Richard Read, of 35, Regent Circus, Piccadilly, London.

An agricultural fire engine (patent); and an agricultural fire engine, smaller size (patent); invented by the late John Read, of Regent Circus, and manufactured by the exhibiter. A patent domestic watering engine, invented by the late John Read, of Regent Circus, improved and manufactured by the exhibiter. A patent injecting instrument, complete, for cattle, &c.; a hollow probang, for relieving hoven or choked cattle; and a hollow probang, for relieving hoven sheep or calves, invented by the late John Read, of Regent Circus, and manufactured by the exhibiter. A patent hand watering machine; and a patent hand watering machine (small size), invented by the late John Read, of Regent Circus, improved and manufactured by the exhibiter. A patent greenhouse syringe; and a tobacco fumigator, invented by the late John Read, of Regent Circus, and manufactured by the exhibiter.

Robert and Francis Grassby, of Marton, near Hull, Yorkshire.

A four-horse thrashing machine, a light-land plough, and a plough for heavy land, invented and improved by Robert Grassby, of Marton, and manufactured by the exhibiters.

George Howe, of 119, Great Guildford-street, Southwark.

(New implement) a portable four-horse power steam engine, invented and manufactured by the exhibiter.

F. M'Neill and Co., of Lamb's Buildings, Bunhill-row, London.

The patent asphalted felt, for roofing houses and every description of farm buildings; a portable tar-kettle, invented by J. F. Williams, and manufactured by the exhibiters; a rick stand of very cheap construction, and an excellent check to vermin, invented by J. F. Williams; various models and specimen framings, illustrating the various applications of the asphalted felt for roofings, ceilings, lining damp walls, covering flats, &c.

Richard Hornsby, of Spittlegate, near Grantham, Lincoln.

A drill machine for corn and general purposes (this drill received the prizes of the Royal Agricultural Society of England at Liverpool, July 1841, £25; Bristol, July 1842, £30; Derby, July 1843, £10; at the subsequent trial of drills at Pusey, October 1845, £ ; and at Newcastle-upon-Tyne, July 1846, £15; a twelve-coulter corn and seed drill; a six-row drill for turnip seed, mangel wurzel, and manure (this drill received the prize of £10 of the Royal Agricultural Society of England at the subsequent trial of drills at Pusey, October 1845); a turnip seed, mangel wurzel, and manure drill, 2 rows upon ridges, and 3 on the flat (this drill received the prize of £10 of the Royal Agricultural Society of England at the subsequent trial of drills at Pusey, October 1845); a one-row drop ridge drill; a machine for distributing pulverized manures broadcast; a six-horse power portable steam engine; a bolting or batting thrashing part; and a four-horse power portable thrashing machine; invented, improved, and manufactured by the exhibiter. A straw shaker, invented by Richard Clyburn, of Uley, improved and manufactured by the exhibiter. An improved registered corn-dressing machine (this machine received the prize of £3 from the Royal Agricultural Society of England at Newcastle-upon-Tyne, July 1846); and an improved registered chaffing machine; invented, improved, and manufactured by the exhibiter. An improved three-knife chaff-cutting machine; an improved two-knife chaff-cutting machine; and a small two-knife chaff-cutting machine; invented by John Cornes, of Barbridge, improved and manufactured by the exhibiter. A double cake-breaker (this machine had the prize of £5 awarded to it at the meeting of the Royal Agricultural Society of England, held at Derby, July 1843; £5 at Southampton, July 1844; and £3 at Shrewsbury, July 1845); and a single cake-breaker; invented, improved, and manufactured by the exhibiter.

Richard Robinson (late of Lisburne), of Belfast, Antrim.

A portable steam engine, applicable to thrashing or other agricultural purposes, boiler invented by Isaac Jennings, of New York, improved and manufactured by the exhibiter; a flax-steeping apparatus, and a flax-breaking machine, invented by R. B. Schenck, of New York, and manufactured by the exhibiter; a scutching machine for flax, improved and manufactured by the exhibiter; a steaming apparatus for general purposes (this apparatus was awarded the prize of £5 at Newcastle-on-Tyne, and £10 at Northampton), and a steaming apparatus, invented by Isaac Jennings, of New York, improved and manufactured by the exhibiter; three churning machines, invented by John Rowan and Sons, of Ballyclare, improved and manufactured by the exhibiter (this well-known machine obtained the prize at Newcastle-on-Tyne of £5; and at Northampton, £5; besides six silver medals, and £30, at different shows in Ireland and Scotland, being always the best); a root washer, invented, improved, and manufactured by the exhibiter.

William Smith, of Kettering, Northamptonshire.

(New implement) an improved patent corn-dressing machine, with double blast, invented by the late Nathaniel Smith, of Kettering, improved and manufactured by the exhibiter; (new implement) a newly-invented steerage horse-hoe, invented, improved, and manufactured by the exhibiter; (new implements) improved skim or paring ploughs, and an improved chaff-cutting machine, improved and manufactured by the exhibiter.

Messrs. Waldie and Hunter, of Kelso, Roxburgh, N. B.

A cart saddle; sets of cart harness for one horse; sets of cart and plough harness; and a set of cart harness with brass mountings; improved and manufactured by the exhibiters.

John Barker, of Dunnington, near York.

Iron subsoil pulverizers, invented by Gray, of Uddleston, near Glasgow, improved and manufactured by the exhibiter; an iron subsoil plough, with large wheel, improved and manufactured by the exhibiter. (New implement) a three-tined grubber, with wood beam and handles; an iron deep-mould trenching plough; a deep-mould trenching plough, with wood beam and handles; a strong iron plough (D.P.), with wheels, and a skimmer attached for double ploughing; a strong wood plough (D.P.), with wheels; a strong iron plough (J.B.), with wheels; an iron swing plough (J.B.); an iron wheel plough (A.M.); and a light iron swing plough (A.M.); invented and manufactured by the exhibiter. A strong iron wheel plough (Y.L.), with truss-beam, invented by Ransome, of Ipswich, and manufactured by the exhibiter. An iron single-wheel plough (A.M.); a wood plough (J.B.), drawn by chain and patent shackle; a wood plough (J.B.), double wheels; a wood plough (J.B.), with single wheel; a strong wood swing plough (J.B.); a light wood swing plough (J.B.); and a light wood pony swing plough; invented and manufactured by the exhibiter. A strong plough (X.L.), with wood beam and handles; a light plough (H.O.), wood beam and handles; and an iron double-breasted expanding plough; manufactured by the exhibiter. An iron double-breasted wheel plough, improved and manufactured by the exhibiter; a wood double-breasted expanding plough, with wheel, invented and manufactured by the exhibiter; a strong iron plough (D.P.), for strong land, manufac-

tured by the exhibiter; a strong wood skimming or paring plough, and a light wood skimming plough, invented by H. S. Thompson, Esq., of Fairfield, near York, and manufactured by the exhibiter. A ribbing plough, with corn drill attached, and rollers for sowing different kinds of grain; a ribbing plough; a small corn drill to attach to a ribbing plough; and (new implement), a four-horse scarifier or drag, frame 4 ft. 6 in. wide, with patent wheels; manufactured by the exhibiter. A three-horse cultivator or scarifier, with four different sets of points, and patent wheels, improved and manufactured by the exhibiter; a three-horse iron cultivator, manufactured by the exhibiter. (New implement) a two-horse iron scarifier, with patent wheels; a two-horse iron stubble parer; and an iron drag-harrow; invented and manufactured by the exhibiter A wood scarifier, manufactured by the exhibiter. A wood drag-harrow; a pair of iron ox-harrows, with handles for strong land; a set of strong iron serpentine harrows; a set of iron serpentine harrows for general use; a set of iron serpentine seed harrows; a set of iron serpentine light harrows; a pair of strong serpentine harrows; a set of diamond iron harrows; a set of iron equallizing harrows; a pair of equallizing harrows; a pair of five-beamed wood skew harrows; a pair of four-beamed wood skew harrows; and a pair of iron expanding ridge harrows; invented and manufactured by the exhibiter. A pair of strong ridge harrows, and a pair of light ridge harrows, manufactured by the exhibiter; a set of diamond wheel harrows for seed, invented and manufactured by the exhibiter; an iron expanding parallel horse-hoe, invented, improved, and manufactured by the exhibiter; an iron equallizing seven-tined horse-hoe, improved and manufactured by the exhibiter. An iron horse-hoe, with five tines, and Norwegian harrow attached; an iron horse-hoe, and harrow attached; an iron horse-hoe, with a lever rake attached; an iron horse-hoe; a one-horse grubber; and a wood scuffler; invented and manufactured by the exhibiter. A chicory hoe, with wheels, manufactured by the exhibiter; an iron eight-coultered corn hoe, with three sets of hoes, improved and manufactured by the exhibiter; an iron six-coultered corn-hoe, with three sets of hoes, manufactured by the exhibiter; a strong iron horse-rake, and a light iron horse-rake, improved and manufactured by the exhibiter; a chicory cutter, for cutting chicory, carrots, mangel wurzel, &c., manufactured by the exhibiter; a Richmond's No. 3 patent straw-cutter, invented and manufactured by Richmond, of Salford; a Gardiner's patent turnip-cutter, invented by Gardiner, of Banbury, and fitted up by the exhibiter; a Gilbert's patent sack-holder, invented by Gilbert; a set of equallizing three-horse draughts, improved and manufactured by the exhibiter; a winnowing machine, manufactured by the exhibiter; iron box wimple trees; improved and manufactured by the exhibiter; iron cobble-trees, invented and manufactured by the exhibiter; a set of patent wheels for drags or scarifiers, a set of chicory tools complete, a set of portable turnip-hoes, an iron sack-barrow, and a turnip-drill for ridges, manufactured by the exhibiter.

Richard Binks, of Catterick, Yorkshire.

A two-wheel iron plough, invented, improved, and manufactured by the exhibiter; a two-wheel iron plough, and a light two-wheel iron plough, invented, improved, and manufactured by the exhibiter (with Messrs. Ransome's truss-beam; a lever presser turnip cutter, invented, improved, and manufactured by the exhibiter; a portable double cheese presser, invented, improved, and manufactured by Messrs. Bolton and Dunn, of Hunton, near Bedale.

John Eaton, of Woodford, near Thrapstone, Northamptonshire.

(New implement) an improved one-horse cart ("Eaton's patent, No. 1"), (new implement) an improved one-horse cart ("Eaton's patent, No. 2"), and (new implement) an improved one-horse cart ("Eaton's patent, No. 3"), invented, improved, and manufactured by the exhibiter; a corn dressing machine, invented by the late John Blackwell, of Twywell, improved and manufactured by the exhibiter.

Thomas Craddock, of Broad-street, Birmingham, Warwickshire.

(New implement) an improved steam engine for agricultural purposes, invented and manufactured by the exhibiter.

John Howard and Son, of Bedford.

A patent iron plough, with two wheels, marked J A (No. 1, maker's list") (Royal Agricultural Society's premiums gained by this plough:—The first prize of £5, at the Liverpool meeting, the first prize of £5 at the Bristol meeting, the first prize of £10 at the Shrewsbury meeting, at the meeting at Newcastle-on-Tyne, 1846, the first prize of £10 for the best plough for light land, and the first prize of £10 for the best plough for heavy land, were both awarded to this implement, also at the late meeting of the Royal Society, Northampton, the first prize was, for the sixth time, again awarded to J. Howard and Son for the best plough on light land); a patent iron plough, with two wheels, marked J A (No. 2, maker's list); a patent iron plough, with two wheels, marked J D; a patent iron swing plough, marked H O; a patent iron plough, with two wheels, marked H L; a patent iron plough (marked J K); and a Northumberland, or double-breasted plough; invented and manufactured by the exhibiters. A patent subsoil plough or sub-pulverizer, invented and patented by John Read, of London, improved and manufactured by the exhibiters (this implement obtained the first prize of £10 at the Southampton meeting in 1844, the first prize of £10 at the Shrewsbury meeting in 1845, the first prize of £10 at the Newcastle-on-Tyne meeting in 1846, and the first prize of £10 at Northampton in 1847). A set of patent four-beam iron harrows, with whippletree (marked No. 10) (the Royal Agricultural Society's premium of £5 was awarded to J. Howard for a set of harrows on this principle, at the Derby meeting); a set of patent three-beam iron harrows, with whippletree (marked No. 10); a set of patent four-beam iron harrows, with whippletree (marked No. 11); a set of patent three-beam iron harrows, with whippletree (marked No. 11); a set of patent four-beam iron harrows, with whippletree (marked No. 12); a set of patent four-beam iron harrows, with whippletree (marked No. 13); a set of patent four-beam iron harrows, with whippletree (marked No. 14); a set of patent jointed iron harrows, with whippletree; a set of patent iron drag harrows, with whippletree (marked No. 17); and a set of patent two-beam iron harrows, with whippletree (marked No. 19); invented by W. Armstrong and J. Howard, of Bedford, and manufactured by the exhibiters. Two wrought iron scarifiers or cultivators, a horse drag rake, two horse hoes, a mill for grinding beans and peas, and a mill for grinding beans, peas, malt, and kibbling barley, &c., invented and manufactured by the exhibiters; a set of improved trussed whippletrees, invented by Egerton Hardinge, of Old Springs, and improved and manufactured by the exhibiters; a set of improved equallizing trussed whippletrees, improved and manufactured by the exhibiters; two improved Bedfordshire carts, improved and manufactured by Maynard and Son, of Bedford; sundry baskets of castings, whippletrees, &c., for using ploughs, &c.

Edward and Thomas Humphries, of Pershore, Worcestershire.

A portable thrashing machine, improved and manufactured by the exhibiters.

John Nelson, of Highfield, near Sheffield, Yorkshire.

(New implements) a set of parturition forceps, invented and manufactured by the exhibiter.

William Robinson, of Halsham in Holderness, near Keyingham, Yorkshire.

(New implement) a corn-dressing machine, for three separate purposes in dressing corn, invented, improved, and manufactured by the exhibiter.

Ogg and Howard, of Northampton.

(New implement) a portable steam engine, applicable to thrashing, and other agricultural purposes, improved and manufactured by the exhibiters; and a thrashing machine, manufactured by the exhibiters.

Thomas Cook, of Snainton, near Pickering, Yorkshire.

(New implement) a scruffler, with skimmer attached, invented and manufactured by the exhibiter; six sets of scythes, improved by the exhibiter, and manufactured by Robert Lindley, of Sheffield; and six sets of hand hoes, invented, improved, and manufactured by the exhibiter (received a prize at the Yorkshire Agricultural Show at Scarborough in 1847).

John Dawson, of Wetherby, Yorkshire.

A new implement for fanning barley, &c., invented by John Dawson, of Wetherby, and manufactured by James Dawson, of Wetherby.

Daniel Harland, of Osbaldwick, near York.

A single-horse Scotch cart, and a light one-horse cart, manufactured by the exhibiter.

John Gillett, of Brailes, near Shipston-on-Stour, Warwick.

(New implement) a patent power guillotine chaff engine, a patent hand-power guillotine chaff engine, and a small hand-power guillotine chaff engine, invented by James Ward, of Stratford-on-Avon, and improved and manufactured by the exhibiter; a patent rick ventilator (received a silver medal at the Derby meeting of the Royal Agricultural Society in July, 1843), and (new implement) a patent self-acting alarum gun, invented, improved, and manufactured by the exhibiter.

Joseph Scurrah, of Crakehall, near Bedale, Yorkshire.

A double-spiked roller, improved and manufactured by the exhibiter; (new implement) a lever hay rake, invented and manufactured by the exhibiter; a lever horse rake, a horse-hoe with lever, and a combined horse-hoe and double mould-board plough, invented, improved, and manufactured by the exhibiter; a two-horse plough for deep ploughing, and a light two-horse plough, improved and manufactured by the exhibiter; and a pair of seed harrows, manufactured by the exhibiter.

William Seaward, Oulton, near Wakefield, Yorkshire.

(New implement) a locomotive hand-power (double action cylinder axle) lever carriage, invented by the exhibiter, improved by Thomas Briggs, of Wakefield, and manufactured by Messrs. Nelson and Sons, Wakefield.

Thomas Speck, of Foxholes, near Malton, Yorkshire.

An improved corn and seed drill, improved by the exhibiter, and manufactured by John Cook, of Foxholes; and (new implement) a turnip and manure drill, improved and manufactured by John Cook, of Foxholes.

John Teasdale, of Burneston, near Bedale, Yorkshire.

A turnip seed and rough manure drill, for two rows upon ridges (to this implement was awarded a prize of £10 by the Royal Agricultural Society at their meeting at Newcastle, in 1846); a turnip seed and finely pulverized manure drill for two rows upon ridges, invented, improved, and manufactured by the exhibiter (received a prize at the Yorkshire Agricultural Society's Show, and at the Wetherby Agricultural Society's Show, in 1844); and a twelve-rowed corn drill, improved and manufactured by the exhibiter.

Joseph Young and John Ingham, of Goxhill, near Barton-on-Humber, Lincolnshire.

A drill for general purposes, improved and manufactured by the exhibiters.

John Bruce, of Tiddington, near Stratford-upon-Avon, Warwickshire.

A registered skim or paring plough (this implement obtained a prize of £5 at Southampton, in July, 1844, and at Shrewsbury, in 1845, a prize of £5), a patent subsoil plough, (new implement) a scarifier or grubber, (new implement) a subsoil pulverizer, a plough for heavy land, and a plough for light land, invented, improved, and manufactured by the exhibiter; (new implement) a patent sackholder, invented and improved by H. Gilbert, of St. Leonard's, and manufactured by the exhibiter; (new implement) a horse hoe for general purposes, and a horse hoe, invented, improved, and manufactured by the exhibiter.

Charles Burrell, of Thetford, Norfolk.

A portable steam engine of six-horse power, invented, improved, and manufactured by the exhibiter; (new implement) a portable thrashing and dressing machine, invented by Mr. Walter Palmer, of Southacre, improved and manufactured by the exhibiter.

Richard Coleman, of Chelmsford, Essex.

A patent expanding lever harrow (a prize of £5 was awarded for this implement by the Royal Society at the Newcastle meeting, 1846), a patent expanding harrow, (new implements) three patent drag harrows and scarifiers, and a patent subsoil harrow or grubber, invented and manufactured by the exhibiter.

Lewis B. Elliott, of Chapel-Brampton, near Northampton.

Two 2-wheeled ploughs, invented by the exhibiter, and manufactured by William Sangdell, of Kingsthorpe, near Northampton.

Joseph Miller, of Barnet-by-le-Wold, near Brigg, Lincolnshire.

A combined drag harrow and scarifier, invented, improved, and manufactured by the exhibiter (this implement obtained the Royal Agricultural Society's silver medal at the Derby meeting in 1843), and a one-horse rake, invented and improved by John Ashwith, of Wrawby, and manufactured by the exhibiter.

Charles Phillips and Co., of the Baptist Mills Iron Foundry, Bristol.

Two turnip-cutters, invented by Charles Phillips, and manufactured by the exhibiters (a prize of £5 was awarded for this machine at the Shrewsbury meeting in July, 1845).

Barrett, Ashton, and Co., of Ceres Iron Works, Hull, Yorkshire.

A portable steam engine for agricultural purposes, six-horse power, (new implement) a bolting thrashing-part, to be annexed to the above steam-engine by a strap, (new implement) a five-horse portable thrashing machine, (new implement) a three-horse portable thrashing machine, (new implement) a two-horse portable thrashing machine, and (new implement) an improved corn-dressing machine, invented improved, and manufactured by the exhibiters; a chaff-cutter with three knives, and a chaff-cutter with two knives, invented and improved by J. Cornes, of Barbridge, and manufactured by the exhibiters; a horse-power gearing for one or two horses, (new implement) a mill (for horse-power) adapted to bruising oats, beans, barley, or malt, (new implement) a mill (for hand-power) adapted to crushing oats, beans, barley, or malt, and (new implement) an improved horse-rake, for twitch, hay, or stubble, invented, improved, and manufactured by the exhibiters; a turnip-cutter, invented, improved, and manufactured by J. Gardiner, of Banbury; a turnip-cutter, invented, improved and manufactured by H. Phillips and Co., of Bristol; two machines (of hand-power) for breaking oil-cake, invented, improved, and manufactured by the exhibiters; (new implement) a spiked clod-crusher, invented by John Naylor, of Winterton, improved and manufactured by the exhibiters; (new implement) a fluted clod-crusher and roller, (new implement) a fluted clod-crusher and roller, invented by William Cambridge, of Lavington, improved and manufactured by the exhibiters; (new implement) an iron scarifier and drag, an iron drag harrow, (new implement) a combined iron scarifier and spike roller, (new implement) an iron wheel plough marked T S, particularly adapted to deep-ploughing on any soil, (new implement) an iron two-wheel plough adapted to any land, marked R H, (new implement) an iron two-wheel plough adapted to any land, marked J L, (new implement) an iron swing plough adapted to any land, marked J L, (new implement) an iron wheel plough best adapted to light land, marked W T, (new implement) an iron swing plough best adapted to light land, marked W T, (new implement) a swing plough adapted to strong land, marked X L, a wheel plough adapted to strong cla·· land, marked X L, a swing plough adapted to light land, marked K Y, and a wheel plough for any land, marked H B, invented, improved, and manufactured by the exhibiters; (new implement) a set of three zigzag iron harrows, 10 feet wide, for strong purposes or three horses, a set of three zigzag iron harrows, ten feet wide, for two horses, a set of four zigzag iron harrows, nine feet wide, for two horses, and (new implement) a set of three zigzag iron harrows, 10 feet wide, for three horses, invented by Wm. Armstrong, of Hawnes, improved and manufactured by the exhibiters; a one-way or turnrest plough, adapted to any soil, invented by W. Lowcock, of Marldon, im-

proved and manufactured by Ransomes and May, of Ipswich; (new implement) an iron subsoil plough or grubber, and (new implement) twelve iron farm and stable buckets, invented, improved, and manufactured by the exhibiters.

William Holderness and James Jebson, of Bishop Wilton, Yorkshire.

A portable machine of four horse power, to thrash and winnow corn, invented, improved, and manufactured by the exhibiters.

Thomas Scragg, of Calveley, near Tarporley, Chester.

A drain tile and pipe making machine, invented and improved by the exhibiter, and manufactured by James Hewitt, of Calveley; a drain tile and pipe making machine, invented by the exhibiter, and manufactured by James Hewitt, of Calveley; a drain tile and pipe making machine, invented and improved by the exhibiter, and manufactured by James Hewitt, of Calveley; a draining tool, for the purpose of shaking out the bottom spit, invented by the exhibiter; an implement to follow the drain tool, which plains the bottom of the drain, and makes it perfectly level, leaving it of a half-round to receive the pipe; a specimen of sewage pipes of large dimension, and a variety of small sewage pipes, and the method of joining them.

James Woods, of Stowmarket, Suffolk.

A mill for crushing linseed, oats, malt, Indian corn, rice, &c., &c., improved and manufactured by the exhibiter; a mill for grinding beans, peas, and malt, and a double roll for spring corn, invented, improved and manufactured by the exhibiter (the Royal English Agricultural Society awarded their prize of ten guineas for this article at their Cambridge meeting in 1840).

Charles D. Young and Co., of Edinburgh, Mid-Lothian.

(New implement) a complete working model of a set of simultaneous-acting iron gates, for railway level crossings; a fine carriage gate, complete, with handsome cast iron posts; a strong wrought iron field gate, with cast iron posts (these gates were shown at the meeting of the Royal Agricultural Society of Ireland held at Belfast, where their superiority gained a high premium and the silver medal; they also gained the silver medal at Glasgow); specimens of strong wrought iron field gates, with cast iron posts; a fine carriage gate, with cast iron posts; an ornamental hand gate (new design) with handsome cast iron pillars; four webs of strong wire netting, for excluding hares, rabbits, and poultry, from gardens and young plantations (this net was exhibited at the show of the Highland and Agricultural Society of Scotland, held lately at Inverness, where its efficiency, great strength, and exceeding cheapness, attracted general attention, and had awarded from the judges the Society's silver medal, with high commendations); two specimens of guards, made of the above netting, for protecting plants, shrubs and trees, from the ravages of hares and rabbits; strong wire netting for sheep, dogs, &c.; and a specimen of a light strong iron and wire garden chair; all invented, improved, and manufactured by the exhibiters.

John Bird, of Bridge Casterton, Rutland, near Stamford, Lincolnshire.

A wrought-iron two-wheel plough, for heavy land, marked A L; a wrought-iron plough, with two wheels, for light land, marked B L; an improved plough, with iron body, marked C L; and a wrought-iron plough, for paring grass ground for burning, marked D L; all invented, improved, and manufactured by the exhibiter.

Messrs. Barrett, Exall, and Andrewes, of Katesgrove Iron Works, Reading, Berks.

A D.P. one-wheel plough (this plough was awarded a prize of £5 at the Liverpool Meeting, as the lightest in draught), invented, improved, and manufactured by the exhibiters; a D.P. 3 two-wheel swing or Northumberland plough, an I.A. 1 two-wheel swing or Norfolk plough, a double plough, and an universal plough, invented and manufactured by the exhibiters; a two-share subsoil plough, invented by Mr. William Exall, of Reading, and manufactured by the exhibiters; a Read's patent sub-pulverizer, invented by Mr. John Read, of London, and manufactured by the exhibiters (this plough was awarded a prize of £5 5s. at the Southampton Meeting, and £5 5s. at the Shrewsbury Meeting); a set of registered circular harrows, a set of registered harrows, a set of light iron registered drags, and a set of iron registered drags, invented by Mr. Charles Haslam, of Whitley, and manufactured by the exhibiters; a three-share horse hoe, a furze or gorse cutting and bruising machine, a registered Cam chaff cutter, No. 1, 8-inch mouthpiece, a registered Cam chaff cutter, No. 2, 9-inch mouthpiece, a registered Cam chaff cutter, No. 3, 10-inch mouthpiece, and a registered Cam chaff cutter, No. 5, 12-inch mouthpiece, with a two-horse power patent horse gear work attached, invented and manufactured by the exhibiters; (new implement) a newly improved registered hay-making machine, invented, improved, and manufactured by the exhibiters. A hand-power thrashing machine; (new implement) a new patent hand-power thrashing machine; (new implement) a patent one-horse power thrashing machine, with screw gear attached to fix; (new implement) a patent two-horse power thrashing machine, with patent gear work, made portable; (new implement) a three-horse power thrashing machine, with patent gear work to fix; (new implement) a four-horse power thrashing machine, with patent gear work, portable; (new implement) a new patent portable four-horse power steam engine and boiler complete, with shafts and wheels for travelling; five oat, malt, linseed, and bean mills; (new implement) an oil-cake mill, No. 2; an oil-cake mill, No. 3; a barley aveler or hummeler; two pairs of patent axle cart wheels; and a grass and turnip seed machine; invented and manufactured by the exhibiters. A patent seed planting and manuring machine, invented, improved, and manufactured by William Henry Vingoe, of Penzance (this machine is an improvement on the one which travelled on three wheels, and obtained a prize of £10 at the meeting of this Society at Shrewsbury in 1845); and a daisy rake, invented and manufactured by Henry A. Thompson, of Lewes.

Robert Broadbent, of Staleybridge, near Manchester, Lancashire.

(New implement) a four-horse power fixed steam engine, a bolting thrashing machine, (new implement) a two-horse power work, (new implement) a small thrashing machine, (new implement) a circular saw and boring machine, a two-knife chaff cutter, a three-knife chaff cutter, an improved turnip cutter, and a small rhubarb, cider, or hop press, invented, improved, and manufactured by the exhibiter; an improved washing machine, invented by an American, and manufactured by the exhibiter; a shafting and pulleys, manufactured by the exhibiter.

Thomas Chandler, of Stockton, near Heytesbury, Wilts.

(New implements) two liquid-manure drills, invented by the exhibiter, and manufactured by R. and J. Reeves, of Bratton, Wilts.

Robert Elliot and Son, of Liverpool, Lancashire.

A heavy land plough, a light land plough, and double-moulded or drill plough, invented, improved, and manufactured by the exhibiters; a four-horse Grubber or Cultivator, invented by Earl Ducie, of Uley, and improved and manufactured by the exhibiter; a double turnip drill, and a drill harrow, invented, improved, and manufactured by the exhibiters.

John Fleetham, of North Dalton near Beverley, Yorkshire.

A turnip-cutting machine, invented, improved, and manufactured by the exhibiter.

William Crosskill, of the Beverley Iron Works, near Beverley, Yorkshire.

Three patent serrated rollers or clod-crushers, invented, improved, and manufactured by the exhibiter (awarded a prize of £20 and a silver medal at Southampton, £10 at Shrewsbury, and the gold medal at Newcastle); an improved patent serrated roller or clod crusher, invented, improved, and manufactured by the exhibiter; two patent serrated rollers or clod crushers, invented, improved, and manufactured by the exhibiter; an improved ring roller, improved and manufac-

tured by the exhibiter; an iron field roller, manufactured by the exhibiter; several pairs of improved patent wheels and axles, invented, improved, and manufactured by the exhibiter (received a medal at the Derby meeting, also a medal at the Newcastle meeting); three sets of improved patent waggon wheels and axles, invented, improved, and manufactured by the exhibiter; three one-horse carts, improved and manufactured by the exhibiter; a one-horse cart, improved by William Torr, of Riby, and manufactured by the exhibiter; a Newcastle "model" one-horse cart or harvest cart, improved and manufactured by the exhibiter (received the head prize at the Newcastle meeting); an improved "model" one-horse cart or harvest cart, a Newcastle "model" one-horse broad-wheel cart or harvest cart, an improved "model" one-horse broad-wheel cart or harvest cart, a Shewsbury one-horse cart, with self-acting tail-board (received a prize of £2 at the Shewsbury meeting), a one-horse spring cart, a Yorkshire pole waggon, a Yorkshire pole waggon mounted upon springs, a pair-horse Lincolnshire waggon, a best Yorkshire pole waggon, a best spring waggon, a portable railway and turn-table, and a set of four railway waggons or trucks, improved and manufactured by the exhibiter; two combined one-horse cart and liquid manure carts, and two improved iron liquid manure carts with watering apparatus, invented, improved, and manufactured by the exhibiter; a patent fixture iron pump with twelve feet of iron pipe and winbore, invented by Mr. Beare, of London, and improved and manufactured by the exhibiter; a patent portable iron pump and stand, and a broadcast portable manure drill, for sowing soot, lime, salt, ashes, guano, &c., invented, improved, and manufactured by the exhibiter; a Yorkshire wold two-row presser and drill, a Yorkshire wold one-row turnip drill, and a Yorkshire wold corn and manure drill, improved and manufactured by the exhibiter; an improved Lincolnshire corn and manure drill, invented, improved, and manufactured by Richard Hornsby, of Grantham; a wood turnip scuffler, an improved four-horse power portable thrashing machine, a two-horse power portable thrashing machine, two improved corn-dressing machines, a two-horse power straw-cutter, a one-horse power straw-cutter, and an improved one-horse driving power, improved and manufactured by the exhibiter; an improved German potato washer, invented, by Captain Carr, of Tuschenbeck, Germany, improved and manufactured by the exhibiter; an Archimedian root washer, a Yorkshire wold turnip-cutter for beasts and sheep, a middle-size oilcake mill, a small-size oilcake mill, a kibbling mill, patterns of iron hurdles, and a bean mill, improved and manufactured by the exhibiter; a hand-power mill, for crushing oats, malt, beans, &c., a one-horse power mill, for crushing oats, malt, barley, beans, &c., a hand-power mill, for crushing linseed, &c., and a one-horse power mill, for crushing linseed, &c., invented, improved, and manufactured by Messrs. Ransomes and May, of Ipswich; a Gillett's patent rick ventilator, invented and improved by Mr. John Gillett, of Brailes, manufactured by Messrs. Edmonds and Son, of Banbury (awarded a medal at the Derby meeting); a patent sack holder, invented and improved by Henry Gilbert, Esq., of St. Leonard's-on-the-Sea, manufactured by the exhibiter; a sack or corn weighing machine, manufactured by R. Mason, of Alford; a barley faultering machine, improved and manufactured by the exhibiter; a patent iron fixture pig trough, invented by Mr. W. Torr, of Riby, improved and manufactured by the exhibiter; a circular iron dog or sheep-trough, a large circular iron pig-trough, improved and manufactured by the exhibiter; two drag harrows or Uley cultivators, invented by Mr. John Morton, of Whitfield, improved by Mr. Richard Clyburn, of Uley, and manufactured by the exhibiter; a combined Norwegian harrow and Ducie's drag, and two improved Norwegian harrows, improved and manufactured by the exhibiter; a patent subsoil pulverizer, invented by the late Mr. John Read, of London, and manufactured by the exhibiter (obtained a prize of 10 sovs. at Southampton in 1844, 10 sovs. at Shrewsbury in 1845, 10 sovs. at Newcastle in 1846, and 13 sovs. at Northampton in 1847); a patent iron plough, invented, improved, and manufactured by Messrs. Ransomes and May, of Ipswich; a set of patent four-beam light seed harrows, and two sets of patent four-beam diagonal iron harrows (obtained the prize of £5 at the Derby meeting in 4843, at the Southampton meeting in 1844, at the Shrewsbury meeting in 1845, and at the Northampton meeting in 1847), invented by Samuel Taylor, of Cotton End, improved and manufactured by Mr. W. Williams, of Bedford; a patent balance lever iron horse-rake, invented, improved, and manufactured by Messrs. Smith and Co., of Stamford; an improved haymaker, and an improved wrought-iron cultivator, improved and manufactured by the exhibiter.

Joseph Henshaw, of Holmes Chapel, near Middlewich, Cheshire.

(New implement) a new semi-circle turnip-cutter, invented, improved, and manufactured by the exhibiter; a new reverberatory churn, invented and manufactured by the exhibiter.

Messrs. Hicks, of Aberford, near Tadcaster, Yorkshire.

An eleven-coultered drill for general purposes, improved and manufactured by the exhibiters; a cutting-machine (chaff cutter), either by horse or hand, and a winnowing machine, invented by Robert Hicks, of Aberford, and improved and manufactured by the exhibiters; a two-knifed cutting machine for hand, improved and manufactured by the exhibiters.

Edmond Moody, of Frome, Somerset.

A portable steam engine, improved and manufactured by John James Fisher, of Frome; (new implement) a chaff-cutting machine, and (new implement) a turnip-cutting machine, invented and manufactured by the exhibiter.

John Paver, of South Milford, near Ferry Bridge, Yorkshire.

A corn-dressing machine, improved and manufactured by the exhibiter.

Justice Rawlings, of Pertwood, Brixton Deverill, near Warminster, Wiltshire.

(New implement) a two-horse-power thrashing machine, invented and manufactured by the exhibiter; (new implement) a drill, worked by two horses, invented, improved, and manufactured by the exhibiter.

His Grace the Duke of Richmond, of Gordon Castle, near Fochabers, Morayshire.

(New implement) a Scotch single-horse cart, with shifting shelvings and hay frame, with a pair of self-acting drags, the drags invented, and the axles, wheels, and lock improved, by Edward Wagstaff, of Gordon Castle, and the whole manufactured by Peter Mortimer, of Huntly, Aberdeenshire.

Robert Roger, of Stockton-on-Tees, near Stockton, Durham.

A Lambert's draining-tile and pipe machine, invented and improved by Thomas Lambert, of Stockton-on-Tees, and manufactured by the exhibiter; a metal pug mill, improved and manufactured by the exhibiter; a metal land roller, improved and manufactured by Brown and Brothers, of Stockton-on-Tees; a metal pump, improved and manufactured by the exhibiter; (new implement) a liquid manure or water tap, and (new implement) a water and liquid-manure tap, invented by Thomas Lambert, of Stockton-on-Tees, and manufactured by the exhibiter; (new implement) a new metal heel or shoe, invented by Robert Rayson, of Stockton-on-Tees, and manufactured by the exhibiter; a metal corner manger, improved and manufactured by the exhibiter; two water grates and strench traps, invented by A. Brown, of Stockton-on-Tees, improved by Thomas Lambert, of Stockton-on-Tees, and manufactured by the exhibiter.

Richmond and Chandler, of Salford, near Manchester, Lancashire.

An improved steaming apparatus for preparing food for cattle, &c., and a smaller improved steaming apparatus for preparing food for cattle, &c. (a prize of £5 was awarded for this apparatus at Derby), an improved portable steaming apparatus for roots, &c. (a prize of £5 was awarded to this apparatus at Shrewsbury), invented, improved, and manufactured by the exhibiters; (new implement) a chaff machine, No. 1 A., a chaff machine No. 3, a chaff machine No. 4, (new implement) an improved chaff machine No. 5, an improved bean and oat mill, an improved mill for kibbling beans, peas, Indian-corn, oats, malt, &c., another improved mill for kibbling beans, peas, Indian-corn, oats, malt, &c., and improved mill for bruis-

ing linseed, oats, &c., an improved mill for bruising linseed, malt, barley, oats, &c., an improved vegetable washer (a silver medal was awarded to the above at Shrewsbury and Newcastle-on-Tyne), an improved turnip-cutter, and (new implement) an improved churn, invented, improved, and manufactured by the exhibiters; (new implement) a patent sack-holder, invented and improved by Henry Gilbert, of St. Leonards-on-Sea, and manufactured by the exhibiters.

Robert Scrivener, of Alperton, near Acton, Middlesex.

A hand-tile machine, and a brick and tile machine for steam, horse, or water-power, invented by John Ainslie, of London, improved by the exhibiter, and manufactured by George Howe, of London; a horse-power, improved by the exhibiter, and manufactured by George Howe, of London.

Samuel Smith, of Northampton, Northamptonshire.

An improved lever cultivator or scarifier (the Society's silver medal was awarded to this implement at Newcastle, July 26th, 1846), (new implement) an improved lever cultivator or scarifier, and (new implement) an improved lever Norwegian harrow, invented, improved, and manufactured by the exhibiter; a three-knife chaff machine, invented by Cornes, improved and manufactured by the exhibiter; a two-knife chaff machine, manufactured by the exhibiter; a linseed mill, invented, improved, and manufactured by the exhibiter; a cake mill for breaking oil-cake, manufactured by the exhibiter; an improved parallel-motion lever horse-hoe, invented, improved, and manufactured by the exhibiter; (new implement) a parallel motion horse-hoe, and (new implement) an improved tile machine for making drain-tiles and bricks, improved and manufactured by the exhibiter.

John Summers, of Scarborough, Yorkshire.

Two corn-dressing machines, improved and manufactured by the exhibiter; a blowing machine, manufactured by the exhibiter; a corn and turnip drill, improved and manufactured by the exhibiter.

W. H. Vingoe, of Penzance, Cornwall.

(New implement) a patent seed planting and manuring machine, invented, improved, and manufactured by the exhibiter (this implement was awarded a prize of £10 at the meeting of the Royal Agricultural Society at Shrewsbury; (new implement) a hand or small horse seed machine, with manure part, invented, improved, and manufactured by the exhibiter.

William Ball, of Rothwell, near Kettering, Northampton,

An iron plough, invented by the exhibiter, improved by James Biggs, of Desborough, and manufactured by the exhibiter (this implement was presented with the silver cup at the North Northamptonshire Agricultural Association, held at Kettering in 1847); an iron plough, invented by the exhibiter, improved by James Biggs, of Desborough, and manufactured by the exhibiter; two iron swing ploughs, invented and manufactured by the exhibiter; an iron scarifier, improved and manufactured by the exhibiter; a one-horse cart, invented and manufactured by the exhibiter; a four-horse power bolting thrashing machine, invented by the exhibiter; (new implement) an iron clod cutter, invented and manufactured by the exhibiter.

Thomas Birchall, of Ribbleton Hall, near Preston, Lancaster.

(New implement) a portable steam engine, invented by the exhibiter and manufactured by John Bond, of Saul-street, Preston, Lancashire.

Henry Cholmeley, of Brandsby Lodge, near York.

A corn and hay cart, invented by Robert Robertson, of Scotland, and manufactured by Thomas Bolton, of Brandsby, Yorkshire.

Robert Bruckshaw, of Longslow, near Market Drayton, Shropshire.

Two iron ploughs, an iron ridging plough, two iron parallel expanding horse-hoes, an iron scarifier or grubber, a churn, and three compound lever cheese presses, invented and manufactured by the exhibiter; a drag rake, invented by the exhibiter.

William Busby, of Newton-le-Willows, near Bedale, Yorkshire.

A two-wheeled plough, invented, improved (with Ransome's truss-beam), and manufactured by the exhibiter (the prize of £10 was awarded to this plough at the meeting of the Royal Agricultural Society, held at Northampton, in 1847; a two-wheeled plough for strong land, a light two-wheeled plough, three other two-wheeled ploughs, a one-wheeled plough, five swing ploughs, and a double-mould or ridge plough, invented, improved, and manufactured by the exhibiter; an improved ribbing plough, invented and manufactured by the exhibiter; three scrufflers, a scarifier, a light scarifier, a drag harrow and scarifier, a grass-land cultivator (and also, when required, may be used as a hay or stubble rake), a strong horse-rake, and a light horse-rake, invented, improved, and manufactured by the exhibiter; a set of strong harrows, a set of harrows, and a set of light harrows, invented by Saunders and Williams, of Bedford; a set of undulating harrows, invented, improved, and manufactured by the exhibiter; three chaff machines, invented by Cornes; a chaff machine, invented by Richmond; a turnip cutter, invented by Gardiner; and a fruit gatherer, invented by Mr. Read.

Mr. William Cambridge, of Market Lavington, near Devizes, Wilts.

A pair of portable mill stones, invented and manufactured by the exhibiter; a four-horse-power portable steam-engine, invented, improved, and manufactured by the exhibiter (W. C. had for his portable steam-engine a prize of £15 awarded him by the Royal Agricultural Society at their meeting at Bristol, £10 at Derby, £5 at Southampton, £5 at Shrewsbury, and £50 at Northampton); a portable bolting thrashing machine, a patent portable four-horse-power horse-work, a patent thrashing machine, a patent press-wheel roller or clod-crusher, invented, improved, and manufactured by the exhibiter (it received a prize of £5 at Preston, Lancashire; also prizes at the Farmers' Club Meeting and Ploughing Match at Exminster and Exeter, as being the best implement to reduce hard cloddy lands to a state to receive seeds, and being a certain preventive to the ravages of the wire worm); four other patent press-wheel rollers or clod-crushers, invented and manufactured by the exhibiter; a seven-tine scarifier, manufactured by the exhibiter.

George Coates, of Richmond, Yorkshire.

A four-wheeled implement, invented and manufactured by the exhibiter.

William Crowley, of Newport Pagnell, Bucks.

(New implement) an implement for distributing pulverized manures broadcast, (new implement) a light one-horse cart upon a new principle, and a pair of hames for general use, invented and manufactured by the exhibiter.

John Cornes, of Barbridge, near Nantwich, Chester.

Four different chaff-cutting machines with two knives, invented and manufactured by the exhibiter; a registered chaff-cutting machine with three knives (this machine gained a prize of £10 at the Royal Agricultural Society's Meeting at Shrewsbury in 1845, at Newcastle-upon-Tyne in 1846, and at Northampton in 1847), a chaff-cutting machine with two knives, (new implement) a turnip-cutting machine upon a new principle, (new implement) a turnip-cutting machine, a frame and pulleys, and a turnip drill on the ridge single, invented and manufactured by the exhibiter.

Richard Garrett, of Leiston Works, near Saxmundham, Suffolk.

A stand of models of agricultural implements, manufactured by R. Garrett and Son; a drill for general purposes, invented and manufactured by R. Garrett and Son (R. Garrett and Son were awarded prizes by the Royal Agricultural Society for this drill at Liverpool, 1841, £10, Derby, 1843, £30, Southampton, 1844, £20 and a medal, and at Northampton, 1847, £15). Another drill for general purposes; a registered Kent drill for general purposes (a prize of £5 was awarded to R. Garrett and Son for this drill at Newcastle, in 1846); a broad-cast manure distributor; a drill for turnips and mangel wurzel, with manure, on the flat, No. 37 B (this drill was awarded a prize of £10 at the Royal Agricultural Society's

Meeting at Cambridge, 1840, and £10 at Northampton, in 1847); and a drill for turnips and mangel wurzel, with manure, on the ridge, No. 36 A; invented and manufactured by R. Garrett and Son (this drill was awarded a prize of £20 at the Royal Agricultural Society's Meeting at Bristol in 1842, and £10 at Northampton, 1847). A twelve-row lever drill for all kinds of grain and seed, a fourteen-row lever corn drill, and a fifteen-row lever corn drill, improved and manufactured by R. Garrett and Son; a patent horse hoe No. 9 (this implement was awarded prizes by the Royal Agricultural Society at Liverpool, 1841, at Bristol, 1842, at Derby, 1843, at Southampton, 1844, and Northampton, 1847), a patent horse hoe No. 5, a four-horse power thrashing machine No. 49, a four-horse power bolting thrashing machine (the prize of £25 was awarded for this machine at the Royal Agricultural Society's Meeting at Newcastle, 1846, and the prize of £20 at Northampton, 1847), a steam power bolting thrashing machine, a two-horse power thrashing machine, a corn dressing machine 51 C, a corn dressing machine No. 51, and a horse-power chaff cutter 61 A, invented and manufactured by Garrett and Son; a chaff cutter No. 61, a mill for oats, beans, peas, and malt No. 58-25, a linseed cake crusher 67 B, a rape and linseed cake crusher (prizes were awarded R. Garrett and Son by the Royal Agricultural Society for this machine at Cambridge, 1840, £5, at Liverpool, 1841, £5, and at Bristol, 1842, £3), and a rape and linseed cake crusher, improved and manufactured by R. Garrett and Son; a patent turnip cutter, invented by Charles Phillips, of Bristol, and manufactured by Garrett and Son; a patent subsoil pulverizer, invented by the late John Read, of London, and manufactured by Garrett and Son (prizes were awarded for this plough by the Royal Agricultural Society at Southampton, 1844, £10, at Shrewsbury, 1845, £10, and at Newcastle, 1846, £10); a patent lever drag rake, improved and manufactured by Garrett and Son; a patent expanding lever harrow (this implement obtained the prize at Newcastle in 1846), and a patent expanding harrow, invented by R. Coleman, of Colchester, and manufactured by Garrett and Son; an iron field roll, improved and manufactured by Garrett and Son; a jointed iron field roll, invented and manufactured by Garrett and Son; a patent clod crusher, improved and manufactured by Garrett and Son; a patent drain pipe and tile machine, invented by Richard Weller, of Capel, near Dorking, and manufactured by Garrett and Son (a prize of £5 was awarded for this machine at Newcastle in 1846); a patent wrought-iron corn rick stand, invented by the late J. Springall, of Ipswich, and manufactured by Garrett and Son (a medal was awarded by the Royal Agricultural Society at Southampton to R. Garrett and Son for this rick stand); a carrot drill, and a Kent plough, improved and manufactured by Joseph Simmons, of Maidstone; and a six-horse power portable steam engine, improved and manufactured by Garrett and Son.

Henry Hammond, of Wheldrake, near York, Yorkshire.

A turnip and manure drill, on the ridge, improved and manufactured by the exhibiter; a turnip and manure drill, on the flat, manufactured by the exhibiter; a turnip and mangel wurzel hand drill, and a wrought-iron subsoil pulverizer for gravel land, invented and manufactured by the exhibiter; and a common plough, for clay land, manufactured by the exhibiter.

Edward Hill, of Brierly Hill Iron Works, near Dudley, Worcester.

A wrought-iron skim (this implement obtained the first prize of its class at the Derby Meeting of this society), (new implement) a wrought-iron skim, an iron granary crane and winch, (new implement) a wrought-iron cart, a wrought-iron barrow, with apparatus for heating gas tar, naphtha, varnish, &c., &c., and a wrought-iron garden or stable barrow, invented and manufactured by the exhibiter; (new implement) a patent sack holder, invented by Henry Gilbert, Esq., of St. Leonards, and manufactured by the exhibiter; a wrought-iron field gate and posts (this gate and posts obtained the silver medal of the society at the Derby Meeting in 1843), a wrought-iron field gate, (new implement) a wrought-iron skim or paring plough, (new implement) a wrought-iron rick stand, three different wrought-iron tree guards, two wrought-iron farmers' hurdles, two wrought-iron sheep hurdles, two wrought-iron cattle hurdles, two wrought-iron ox hurdles, a length of continuous sheep fencing of wrought-iron, two lengths of continuous cattle fencing of wrought-iron, three lengths of continuous ox fencing of wrought-iron, two lengths of continuous deer fencing of wrrught-iron, three ornamental hare-proof hurdles, a length of hare-proof fencing, a wrought-iron ornamental garden chair, and a wrought-iron garden seat, invented and manufactured by the exhibiter; and a specimen of naptha black varnish on wood and iron.

Phillips Fowler Hodgkins, of Chipping Norton, Oxfordshire.

A patent self-twisting single-hand seed dibbler, and three single-hand seed dibblers, invented, improved, and manufactured by the exhibiter; (new implement) a single-hand seed planter, invented and manufactured by the exhibiter; (new implement) a patent portable cooking stove (private mark, No. 2), invented and manufactured by J. W. Lane, of Witney.

George Hunter, of Ulceby, near Barrow-upon-Humber, Lincolnshire.

A four-horse power portable thrashing machine, improved and manufactured by the exhibiter; a drill for general purposes, invented, improved, and manufactured by the exhibiter; a blowing machine, invented, improved, and manufactured by Mr. Hunter, of Bainbrook; a grubber and scarifier, invented, improved, and manufactured by the exhibiter; and a Norwegian harrow, improved and manufactured by the exhibiter.

Thomas Hunter, of Ulceby, near Barrow-upon-Humber, Lincolnshire.

A drill for corn and general purposes, invented by Mr. Cartwright, of Fordington, improved and manufactured by the exhibiter (this implement obtained the prize of £10 for the best manure drill at Newcastle in 1846); a drill for general purposes, a corn drill, and a grubber and scarifier, invented, improved, and manufactured by the exhibiter; and a Norwegian harrow, improved and manufactured by the exhibiter.

Mapplebeck and Lowe, of Birmingham, Warwickshire.

(New implement) an improved registered skim or surface plough, invented by W. Staite, of Radford, and manufactured by Joseph Page, of Radford; two of Fairbank's patent 10-cwt. weighing machines, a Fairbank's patent 5-cwt. weighing machine, a 5-cwt. weighing machine, three 4-cwt. weighing machines, improved and manufactured by W. and T. Avery, of Birmingham; a 3½-cwt. weighing machine, invented, improved, and manufactured by W. and T. Avery, of Birmingham; three 3-cwt. weighing machines, improved and manufactured by W. and T. Avery, of Birmingham; a steelyard, with frame for weighing sacks, &c., manufactured by W. and T. Avery, of Birmingham; a set of new pattern iron weights, manufactured by the exhibiters; a portable kibbling mill on a cast-iron frame, a portable kibbling mill on a wood frame, a portable bean splitting mill on a cast-iron frame, a malt mill with wheel and iron hopper, a kibbling mill with wheel and iron hopper, and a bean splitting mill with wheel and iron hopper, improved and manufactured by W. H. Reynolds, of Birmingham; a copper steam generator and vessel, invented by C. Horn, of Oxford, and manufactured by Gill and Ward, of Oxford; an iron field roller, improved and manufactured by the Coalbrook-dale Company; a garden roller, manufactured by the Coalbrook-dale Company; an iron sack barrow, improved and manufactured by the Coalbrook-dale Company; a patent iron plough (private mark, Y L L), improved and manufactured by Ransome and May, of Ipswich (this plough had a prize of £10 and silver medal as the best heavy land plough, and also £10 and silver medal as the best light land plough, awarded at the Southampton Meeting), an improved iron sheep hurdle, and three different iron hurdles, manufactured by the exhibiters; a bundle of best fencing wire; a set of patent draining tools, invented by Josiah Parkes, draining engineer, London, and manufactured by W. A. Lyndon, of Birmingham (the prize of £5 was awarded to these tools at the Royal Agricultural Meeting at Northampton, 1847, as "the best tools for friable land"); a set of patent draining tools No. 1, a set of patent draining tools No 2 (the prize of £5 was awarded to these tools at the Royal Agricultural Meeting at Northampton, 1847, as "the best tools for general draining"), a set of patent draining tools No. 3, and a set of patent draining tools No. 4, for clay lands, invented and manufactured by W. A. Lyndon, of Birmingham; strong digging

forks, a digging fork for hop lands, a potato fork, an improved cast-steel hay fork, and an improved cast-steel pitching fork, manufactured by W. A. Lyndon, of Birmingham; two patent iron bedsteads, invented, improved, and manufactured by R. W. Winfield, of Birmingham; a garden engine, improved and manufactured by the exhibiters; a patent mowing machine, for cutting lawns, grass-plots, &c., invented by E. Budding, of Dursley, and manufactured by Ferrabee, of Stroud; a garden seat, invented and manufactured by the Coalbrookdale Company; (new implement) a registered portable domestic cooking stove, invented by C. Jerome, of Liverpool, and manufactured by the exhibiters; an oven and sham cottage grate, an oven and ironing stove cottage grate, an oven and boiler cottage grate, and an oven and ironing stove cottage grate, manufactured by the exhibiters; an improved economical cottage range, invented by E. Brown, of Lyme, and manufactured by the exhibiters; and a stand of models.

Smith and Co., of Stamford, Lincolnshire.

A Smith and Co.'s patent double-action haymaker (this implement, in its first and unimproved form, was honoured by the Royal Society's prize of £5 at the Newcastle meeting—there was no prize offered for haymakers at the Northampton meeting—it also obtained a prize of £5 5s. at the Derbyshire, and one of £5 5s. at the great Yorkshire meetings), a Smith and Co.'s Patent double action haymaker, with patent wrought iron wheels, a Smith and Co.'s patent all-iron horse rake, for hay, corn, stubbles, twitch, and for dressing grass land clean from moss, &c., a Smith and Co.'s patent all-iron horse rake, and a Smith and Co.'s patent level-wheel hand rake, for hay, corn, &c., invented, improved, and manufactured by the exhibiters; a Smith and Co.'s improved scarifier and cultivator, or grubber, of wrought iron, invented by S. Smith of Northampton, and improved and manufactured by the exhibiters (this implement obtained the Royal Society's medal at Newcastle); a Smith and Co.'s improved lever cultivator or grubber, for scarifying or paring, (new implement) a Smith and Co.'s patent manure cart and manure spreader, (new implement) a Smith and Co.'s patent drill for general purposes, and manure-spreading machine, (new implement) a Smith and Co.'s patent seed and corn drill, a Smith and Co.'s patent horse dibbling machine, a Smith and Co.'s improved barley dresser and awning machine; a Smith and Co.'s patent safety chaff litter and hop-bine or cane-top cutter No. 1, a Smith and Co.'s patent safety (No. 2) chaff litter, hop-bine, and cane-top cutter, a Smith and Co.'s patent safety (No. 4) chaff machine, a set of one-horse works, and a set of three wheels as samples of Smith and Co.'s patent wrought iron wheels, invented, improved, and manufactured by the exhibiters; a wrought iron hen pen, invented by Mr. Bradford, of Tickencotes, and improved and manufactured by the exhibiters.

Octavius Henry Smith, of Thames Bank, near Westminster, Middlesex.

Three pairs of Scotch cart wheels; three pairs of market cart wheels; a pair of hind waggon wheels; a pair of front waggon wheels; a pair of cart wheels; and a pair of spring cart wheels; manufactured by the exhibiter.

John Summers, of Wold Newton, near Bridlington, Yorkshire.

(New implement) a rotary straw shaker, invented by Joseph Eldin, of Frodingham Grange, and improved and manufactured by the exhibiter, (new implement) an implement for removing shocks of corn, &c., invented and manufactured by the exhibiter; a lever corn rake (this implement, after its first improvement, obtained a prize at the Bridlington Agricultural Meeting, or Show, for the East Riding), a plough for light land, and a scarifier or grubber, improved and manufactured by the exhibiter (for this implement the Yorkshire Agricultural Society awarded a premium of £1 at the Scarborough meeting last year).

Charles Thomas, of Stratford-on-Avon, Warwickshire.

Four flexible saddles, and a flexible hunting saddle, registered July 10, 1845, invented by Mr. A. Newland, of Stratford-on-Avon, and manufactured by the exhibiter.

Thomas Walker, of Wootton, near Barton-upon-Humber, Lincolnshire.

(New implement) a drill for general purposes, (new implement) a scarifier and grubber, (new implement) a large drag harrow, and (new implement) a set of iron harrows, invented, improved, and manufactured by the exhibiter; (new implement) a Norwegian harrow, invented by T. Stratton, of Bristol, and improved and manufactured by the exhibiter.

Mary Wedlake and Co., of Hornchurch, near Romford, Essex.

A double-action hay making machine, invented and improved by the late Thomas Wedlake of Hornchurch, and manufactured by the exhibiters (received the silver medal at the Derby Show); five other double-action hay making machines, invented and improved by the late Thomas Wedlake, of Hornchurch, and manufactured by the exhibiters; (new implement) a machine for bruising gorse by manual labour, (new implement) a four-horse power thrashing machine, and a convex chaff cutting machine, for manual power, invented, improved, and manufactured by the exhibiters; a convex chaff cutting machine, for manual power; a machine for bruising linseed, oats, beans, lentils, &c., invented and manufactured by the exhibiters; an improved mill for bruising beans, invented by the exhibiters; a mill for bruising linseed alone, invented and manufactured by the exhibiters; (new implement) a patent sack holder, invented by Mr. Gilbert, of St. Leonard's, and manufactured by the exhibiters; a gang of four light harrows, with weigh and whippletrees, manufactured by the exhibiters; an improved winnowing machine for corn and seeds, invented and manufactured by the exhibiters; an improved vertical turnip cutter for beasts and sheep, invented by the exhibiters; a broadcast seed machine, 8 feet 6 inches, a broadcast seed machine, 11 feet, and a broadcast seed machine, 14 feet, manufactured by the exhibiters.

Thomas Abbey, of Dunnington, near York.

A four-horse portable thrashing machine, a four-horse portable thrashing and winnowing machine, and a winnowing machine, improved and manufactured by the exhibiter; a six coulter drill for chicory, &c., a two coulter drill for chicory, &c., a washing machine for chicory, &c., two cutting machines for chicory, and a hand scruffler for chicory, &c., invented and manufactured by the exhibiter; a hand spittle, invented by Thomas Agar, of Dunnington, and improved and manufactured by the exhibiter.

Edward Hammond Bentall, of Heybridge, near Maldon, Essex.

A Bentall's improved bolting thrashing machine, invented, improved, and manufactured by the exhibiter; a Bentall's patent broadshare, or scarifier and subsoil plough combined in one implement, a Bentall's patent broadshare, and a Bentall's patent seed depositor, invented and manufactured by the exhibiter (to this machine a silver medal was awarded at the Shrewsbury meeting of the Royal Agricultural Society in 1845); a pair of Essex wheat dibbs, improved and manufactured by the exhibiter.

R. Bradley and Co., of Wakefield, Yorkshire.

A drain tile and pipe machine, entitled the "Economic Drain Tile and Pipe Machine," invented by Messrs. Denton and Charnock, of Wakefield, improved and manufactured by the exhibiters; two drain tile and pipe machines, entitled the "Utile Drain Tile and Pipe Machine," (new implement) a brick press, two bean splitters, a double spike roller, or Norwegian harrow, (new implement) a flax breaking machine, (new implement) a scutching machine, and a corn and seed drill, invented, improved, and manufactured by the exhibiters.

Thomas Buxton, of New Malton, Yorkshire.

A thrashing machine to be worked by five horses, a corn, turnip, and manure drill for eight rows, a corn, turnip, and manure drill for six rows, a moss harrow, and a three-rowed presser, with a three-rowed drill attached, improved and manufactured by the exhibiter; an American revolving rake, and a hay-spreading machine, manufactured by the exhibiter; a horse hoe, invented and manufactured by the exhibiter; a turnip and manure drill, improved and manufactured by the exhibiter; a Yorkshire plough for heavy land, and a Yorkshire plough for

light land, manufactured by the exhibiter; a land scruffler, for working between rows of turnips, potatoes, beans, or peas, improved and manufactured by the exhibiter; a one-horse cart for general uses, manufactured by the exhibiter; an iron liquid manure cart, with watering apparatus, improved and manufactured by the exhibiter; an iron clod-crusher, invented by James Booth, of Malton, and improved and manufactured by the exhibiter; (new implement) a linseed mill, (new implement) a barley mill for grinding oats, beans, or other agricultural produce into meal, and (new implement) a machine for grinding wheat into meal, invented and manufactured by the exhibiter; a two-knived straw cutter, improved and manufactured by the exhibiter; a two-knived straw-cutter, manufactured by the exhibiter; a malt mill, improved and manufactured by the exhibiter.

James Comins, of South Molton, Devonshire.

A horse hoe for hoeing turnips, mangel-wurzel, &c., invented and manufactured by the exhibiter; (new implement) a horse hoe for hoeing turnips, mangel-wurzel, &c., invented by the the exhibiter, improved by Mr. Willis, of Dennaton, near Swymbridge, and manufactured by the exhibiter; (new implements) two newly-registered one-way turnover or turnrest ploughs, registered August 20, 1847, and two subsoil pulverizers, invented, improved, and manufactured by the exhibiter.

John Cornes, jun., of Market Drayton, Shropshire.

(New implements) two dressing or winnowing machines, (new implement) a double-actioned chaffing engine, and (new implement) a double-actioned cheese press, invented, improved, and manufactured by the exhibiter; (new implement) a diminutive mangle for private families, invented and manufactured by the exhibiter.

James Hill Dickson, of the City of London, Middlesex.

(New implement) a flax-breaking and scutching mill, and (new implement) a rippling machine, invented, improved, and manufactured by the exhibiter; a tank for steeping flax, invented and manufactured by the exhibiter; a portable steam engine of four-horse power for travelling, invented, improved, and manufactured by Ryland and Dean, of Birmingham.

Gibson and Dove, of York.

A mill for crushing beans, oats, &c., a mill for crushing beans, oats, peas, malt, &c., and an improved mill for bruising linseed, oats, &c., invented, improved, and manufactured by James Richmond, of Salford; a mill for bruising oats, beans, &c., invented, improved, and manufactured by A. Dean, of Birminghem; a hand-power guillotine chaff cutter, and a power chaff cutter, invented by Ward, Colbourne, and Gillett, of Stratford-on-Avon, and improved and manufactured by John Gillett, of Brailes; a hand chaff cutter, manufactured by Thomas Abbey, of Dunnington; a hand chaff cutter, manufactured by G. Barker, of Easingwold; a patent turnip cutter (a premium of £5 was awarded for this machine at the Southampton meeting in 1844), and a similar patent turnip cutter, invented and manufactured by J. Gardiner, of Banbury; a turnip cutter, manufactured by George Barker, of Easingwold; a machine for breaking oilcake for beasts and sheep, invented, improved, and manufactured by W. N. Nickleson, of Newark; an iron sack barrow, manufactured by the exhibiters; two garden rollers, manufactured by Newton and Co., of Thorncliffe; an iron cattle trough, a circular iron pig trough with 8 divisions, an iron pig trough, and an iron pump, manufactured by Newton and Co., of Thorncliffe; a harness stove, invented and manufactured by the Coalbrookdale Company; two hand glass frames, manufactured by the Cannon Company; two iron garden chairs, manufactured by Newton and Co., of Thorncliffe; an iron garden or hall chair, manufactured by J. Haywood, of Derby; a cast-iron stable post, with top and bottom rail, manufactured by Newton and Co., of Thorncliffe; a 4-cwt. weighing machine, and a 5-cwt. weighing machine, manufactured by W. and T. Avery, of Birmingham; a 3-cwt. weighing machine, manufactured by T. and H. Whitfield, of Birmingham; a 3-cwt. machine on wheels, manufactured by Martineau and Smith, of Birmingham; a steelyard, with frame for weighing sacks, &c., manufactured by W. and T. Avery, of Birmingham; an iron patent bedstead, invented, improved, and manufactured by Peyton and Harlow, of Birmingham; a set of patent hames, invented by Bencraft, of London, and manufactured by Brace and Box, of Walsall; a fork for washing potatoes and other roots, manufactured by the exhibiters; a patent sack holder, invented by Gilbert, and manufactured by Richmond and Chandler, of Salford; a cottage grate, manufactured by the exhibiters; a patent register grate, invented and manufactured by Robertson and Jobson, of Sheffield; a wrought-iron fireproof safe, and a wrought-iron fireproof cashbox, manufactured by the exhibiters; a garden engine, manufactured by Warner and Sons, of London; a patent conservatory pump, invented and manufactured by Warner and Sons, of London; a patent garden syringe, invented by Read, of London, and manufactured by Warner and Sons, of London; a patent garden engine, invented and manufactured by Warner and Sons, of London; six patent draining tools, assorted sizes, invented by Orme, and manufactured by Forster, of Stourbridge; a pair of patent parallel vice, manufactured by Sandford and Owen, of Rotherham; a pair of patent fruit gatherers, invented by Dray; a patent bread knife, invented and manufactured by Mapplebeck and Whitfield, of Birmingham.

A. W. Gower and Sons, of Market Drayton, Shropshire, and Hook, near Hartford Bridge, Hampshire.

A thirteen-coulter corn drill, invented by the late Mr. Smyth, of Peaseuhall, Suffolk, and A. W. Gower, of Hook, Hartford Bridge, Hants, improved by Andrew Gower, of Market Drayton, and manufactured by the exhibiters; a thirteen-coulter drill for general purposes, invented by A. Gower, of Hook, Hartford Bridge, improved by Andrew Gower, of Market Drayton, and manufactured by the exhibiters; a two-rowed turnip and manure drill for ridge work, invented and improved by Andrew Gower, of Market Drayton, and manufactured by the exhibiters; a five-rowed turnip and manure drill, for flat work, invented A. W. Gower, of Hook, Hartford Bridge, improved by Andrew Gower, of Market Drayton, and manufactured by the exhibiters; a patent sack holder, invented by Henry Herbert, of St. Leonard's, Sussex, and manufactured by the exhibiters; a broadcast manure distributor, invented by Andrew Gower, of Market Drayton, and manufactured by the exhibiters.

Joseph Cook Grant, of Stamford, Lincolnshire.

A Grant's patent lever horse rake (this implement again added to its fame at the meeting of the Royal Agricultural Society of England at Northampton, the silver medal being awarded to it; its merits are fully known and duly appreciated); a Grant's patent lever horse rake, a Grant's patent lever pony rake, a Grant's patent hay-making machine; and patent hay-making machine, invented, improved, and manufactured by the exhibiter; three improved three-knife chaff engines, improved and manufactured by the exhibiter; three two-knife chaff machines, improved and manufactured by the exhibiter; a hand thrashing machine, manufactured by the exhibiter; a two-horse thrashing machine, improved and manufactured by the exhibiter; an improved blowing or chaffing machine, manufactured by the exhibiter; an improved one-row turnip and manure drill, improved and manufactured by the exhibiter; a one-row turnip and mangel-wurzel drill, and an improved garden seed drill, invented, improved, and manufactured by the exhibiter; (new implement) a two-horse cultivator, improved and manufactured by the exhibiter; a five-tined wrought-iron Uley cultivator, and a seven-tined wrought-iron Uley cultivator, invented by Lord Ducie, of Uley, improved and manufactured by the exhibiter; a horse hoe and moulding plough, a wrought-iron expanding horse hoe, a wood-beam expanding horse hoe, and a cast-iron expanding horse hoe, invented, improved, and manufactured by the exhibiter; (new implement) a hand-hoe, invented by Robert Smith, Esq., of Burley-on-the-hill, and manufactured by the exhibiter; two double action-cake mills, improved and manufactured by the exhibiter; two improved G P iron ploughs, invented, improved, and manufactured by the exhibiter; a domestic weighing machine, a farmer's weighing machine, and a merchant's weighing machine, improved and manufactured by the exhibiter; a bean mill on wood stand, and an improved bean mill on iron stand, manufactured by the exhibiter; a set of improved pair-horse wood whippletrees, a set of improved pair-horse iron-tube whippletrees, and a set of improved four-horse iron-tube whippletrees, improved and manufactured by the exhibiter; a wood sack truck; an iron sack truck; and a stand of models.

DAVID HARKES, of Mere, near Knutsford, Cheshire.

A plough for heavy land, manufactured by the exhibiter; a plough for light land, improved and manufactured by the exhibiter; five parallel expanding horse hoes, invented, improved, and manufactured by the exhibiter; a ridging plough, a pair of arched harrows, and two scarifiers or drags, invented and manufactured by the exhibiter.

GEORGE KILBY, of Queeniborough, near Rearsby, Leicestershire.

(New implement) a winnowing machine, a corn and seed-dressing machine, a corn-dressing machine, and a corn-blowing machine, invented and manufactured by A. Pridmore and Son, of Thorpe Satchville, near Melton Mowbray, Leicestershire; a turnip cutting machine, invented, improved, and manufactured by A. Pridmore and Son, of Thorpe Satchville, near Melton Mowbray, Leicestershire; a turf and stubble paring plough, invented, improved, and manufactured by Thomas Glover, of Thrussington, near Leicester (this implement gained a prize of £3 at the Royal Agricultural Society's Show at Liverpool; and £5 at the same society's show at Northampton; and £2, with a silver medal, at the Yorkshire Agricultural Show at Scarborough, 1847).

JAMES KIRKWOOD, of Tranent Foundry, near Tranent, East Lothian.

A swing plough for heavy land, a swing plough for light land, a large grubber or scarifier, a two-horse grubber or scarifier, a green crop cultivator, a drill grubber or scuffler, a drill grubber, a stubble parer and light grubber, a first-furrow draining plough and trenching plough, and two subsoil pulverizers, invented, improved, and manufactured by the exhibiter.

GEORGE LIDDELL, Jun., of Sherburn Tile Sheds, near Durham.

A machine for making drain tiles or pipes, invented and improved by the exhibiter, and manufactured by James Lumsden, of Durham.

WILLIAM HENSMAN and SON, of Woburn, Bedfordshire.

A four-horse power patent thrashing machine, a three-horse power patent thrashing machine, a two-horse power patent thrashing machine, and a one-horse power patent thrashing machine, improved and manufactured by the exhibiters; two patent hand thrashing machines, Nos. 1 and 2, invented by Mr. Barrett, sen., of Reading, Berks, improved and manufactured by the exhibiters; a drill for turnips and manure, on the flat or ridge, an eight-row lever cup drill, for all sorts of corn and seeds, a patent eight-row lever cup drill for corn and seeds, and a six-row lever brush drill for corn and seeds, invented, improved and manufactured by the exhibiters; a chaff engine, a patent plough, marked L 8, a patent plough, marked L 6, and a horse drag rake, improved and manufactured by the exhibiters.

GEORGE MALTHOUSE, of Ripon, Yorkshire.

A drill for general purposes, with self-regulating coulters and rollers, invented, improved, and manufactured by the exhibiter; a grubber, cultivator, or scarifier, invented by James Kirkwood, of Tranent, improved and manufactured by the exhibiter; (new implement) a tile machine and a model of a tile kiln, invented by Robert Stokeld, of Park Hill, Littlethorp.

GEORGE MEYNELL, of Northallerton, Yorkshire.

An improved Norwegian harrow, an improved plough, an improved turnip cutter for cattle and sheep, a ventilating skylight, and a cattle feet clippers, and improved spring bull rings, invented, improved, and manufactured by the exhibiter; a sample of Swede turnips, the growth of last year, preserved by the exhibiter.

JOHN MILES, of Canwell Farm, near Sutton Coldfield, Staffordshire.

A machine for making draining pipes and tiles, to make at both ends, worked by a screw, invented and manufactured by the exhibiter; a machine for making drain pipes and tiles, to make at one end, improved and manufactured by the exhibiter; specimens of pipes made by the machines manufactured by the exhibiter.

JOHN SCOTT, of Belfast, Antrim.

A two-horse power thrashing machine, a one-horse power gear work, a chaff cutter, and a turnip cutter, improved and manufactured by the exhibiter.

CHRISTOPHER JOHN SPENCE, of Stockton-on-Tees, Durham.

(New invention) two casks of manure, called prepared bone manure, invented by M. Joscelin Cooke and the exhibiter, and manufactured by the exhibiter, under the firm of C. J. Spence and Co., of Stockton-on-Tees.

MARK RICHARDSON, of Providence Works, near Leeds, Yorkshire.

(New implement) a drain tile and pipe making machine, invented and manufactured by the exhibiter; (new implement) a brick pressing machine, improved and manufactured by the exhibiter.

J. W. SHARMAN, of Wellingborough, and W. P. STANLEY, of Peterborough, Northamptonshire; and THOMAS JOHNSON, of Leicester, Leicestershire.

A patent scarifier, with seven wrought-iron tines; invented by Mr. Arthur Biddell, of Playford, and improved and manufactured by Ransomes and May, of Ipswich (this implement received the prize of £10 from the Society last year at Northampton); a set of patent truss pometrees for scarifiers, invented, improved, and manufactured by Ransomes and May, of Ipswich; a set of patent iron whippletrees for a pair of horses, invented and manufactured by Ransomes and May, of Ipswich; a wrought-iron turf paring plough, improved and manufactured by Thomas Johnson, of Leicester; (new implement) an improved surface or paring plough, invented and manufactured by Thomas Johnson, of Leicester; (new implement) an iron plough, S.P., with round coulter and patent fasteners, and two wheels, invented by Messrs. Faux, of Yaxley, and improved and manufactured by W P. Stanley, of Peterborough; (new implement) a strong patent iron plough, Y.S.D., invented and manufactured by Ransomes and May, of Ipswich; a wrought-iron horse hoe or cultivator, improved and manufactured by J. W. Sharman, of Wellingborough; (new implement) a hand drilling machine for carrot, mangold wurzel, or turnip seed; invented and manufactured by Thomas Johnson, of Leicester; (new implement) a two-row dibbling machine for all descriptions of seeds, invented by Mr. William Messingham, of Heacham, near Lynn, and manufactured by W. P. Stanley, of Peterborough; a pair of registered hand seed dibblers, invented by Mr. Edward Loomes, of Whittlesea, and manufactured by W. P. Stanley, of Peterborough; (new implement) a pair of hand seed dibblers for two rows, invented by Mr. Edward Loomes, of Whittlesea, and improved and manufactured by W. P. Stanley, of Peterborough; (new implement) an improved sack barrow, sack raiser, and holder, invented and manufactured by W. P. Stanley, of Peterborough; (new implement) an improved corn dressing or winnowing machine, invented by Mr. George Royce, of Fleshland, Lincolnshire, and manufactured by W. P. Stanley, of Peterborough; a linseed and corn crushing machine, supposed to be invented by Messrs. Bond, of Ipswich, and improved and manufactured by W. P. Stanley, of Peterborough; a portable steam generator, with compound tub and vegetable pan, and (new implement) a vertical tubular steam generator, with external and internal safety valve, cocks, and pump invented and manufactured by W. P. Stanley, of Peterborough, and Wm. Medworth, of London; (new implement) a brick pressing machine, invented and manufactured by Thomas Porter, of Leicester.

BARZILLAI STEAD, of Gateforth, near Selby, Yorkshire.

A malleable iron plough, invented, improved, and manufactured by the exhibiter; an iron plough for light land, invented and manufactured by the exhibiter; a wood plough for light land, invented by John Stead, of Hambleton, and improved and manufactured by the exhibiter; a skeif or revolving coulter, improved by the exhibiter, and manufactured by B. Stead, jun., of Gateforth; (new implement) a pair of strong harrows, invented and manufactured by B. Stead, jun., of Gateforth; a pair of iron seed harrows, invented by B. Stead, jun., of Gateforth, and manufactured by the exhibiter; a pair of general purpose harrows, invented and manufactured by the

exhibiter; an iron expanding horse hoe, invented and manufactured by B. Stead, jun., of Gateforth, and improved by Mr. Dodgson, of Gateforth.

Richard Stratton, of Clark-street, Bristol.

A harvest cart, invented by J. Hannam, Esq., of Burcott Park, Oxon, and improved and manufactured by the exhibiter; a harvest cart, invented and manufactured by the exhibiter; a manure cart-body and shafts, and a Scotch cart with patent iron wheels, improved and manufactured by the exhibiter; a Scotch harvest cart-body and shafts, invented by John Morton, Esq., of Whitfield, Gloucestershire, and manufactured by the exhibiter; a single horse farm cart, invented, improved, and manufactured by the exhibiter; a Scotch farm cart, and a spring cart, improved and manufactured by the exhibiter; a light single horse farm cart, (new implement) a patent wrought iron cart, and two single horse carts, invented, improved, and manufactured by the exhibiter; a light cart, improved and manufactured by the exhibiter; a cranked axle manure cart, with liquid manure body to fit the axle and wheels (to this cart was awarded a silver medal at Derby, 1843, a prize of £5 at Southampton, 1844, and a prize of £10 at Northampton, 1847); a portable manure pump and stand, (new implements) three cylinder water and liquid manure carts, (new implements) two patent tumbler carts, (new implements) three pair of patent wrought iron wheels and axle arms (commended in the Report of the Northampton Meeting), a one horse spring cart, a light cart with cranked axle and springs, a Cobourg or family cart (commended by the judges in their Report, at various meetings of the Society, a Coburg or family car, and a chaise cart, invented, improved, and manufactured by the exhibiter; a dog cart, improved and manufactured by the exhibiter; a stand of models of carts and waggons, invented, improved, and manufactured by the exhibiter; a light break waggon, improved and manufactured by the exhibiter; a one horse waggon, with patent iron wheels, invented, improved, and manufactured by the exhibiter; (new implement) a tipping waggon, invented by the exhibiter, improved by Purnell Bransby Purnell, Esq., of Stancombe Park, Dursley, and manufactured by the exhibiter; a sack waggon, improved and manufactured by the exhibiter; a farm waggon, with patent iron wheels, invented, improved, and manufactured by the exhibiter; a farm waggon, and a Berkshire farm waggon, improved and manufactured by the exhibiter; a spring waggon, invented, improved, and manufactured by the exhiter; a Gloucestershire waggon, and a carriage setter, improved and manufactured by the exhibiter; a carriage setter, (new implement) a cart wheel drag shoe, and (new implement) a cart wheel drag shoe, invented, improved, and manufactured by the exhibiter; a sack truck, manufactured by the exhibiter; three wrought iron wheelbarrows, and two sheet iron buckets, invented, improved, and manufactured by the exhibiter; a Norwegian harrow, 5 feet wide, (a prize of £10 was awarded for this implement at Shrewsbury as a new implement, and a prize of £5 at Newcastle), a Norwegian harrow, 4 ft 6 in wide, a Norwegian harrow, 4 feet wide, a Norwegian harrow, 3 feet 6 inches wide, and a lever Norwegian harrow, 4 feet wide, invented by G. E. Frere, Esq., and the exhibiter, of Roydon and Bristol, and improved and manufactured by the exhibiter; a wrought iron cultivator, improved and manufactured by the exhibiter; a 5-tine Gloucestershire cultivator, and a 7-tine Gloucestershire cultivator, invented by Finlayson, improved by Savery and others, and manufactured by the exhibiter; two wrought iron ploughs with steel mould board, manufactured by the exhibiter; two moulding and hoeing ploughs for ridge work, improved and manufactured by the exhibiter; a Read's patent subpulverizer, and a Read's patent sub-pulverizer fitted as a drill grubber, invented by the late John Read, of London, and im-proved and manufactured by the exhibiter; an oat crusher, a linseed mill, and a bean splitting mill, invented, improved, and manufactured by the exhibiter; a lever cheese press, invented by W. J. Enigell, of Bristol, and manufactured by the exhibiter (received a premium of £5 at Bristol, and a medal at Derby); an improved cheese press with compound leverage, a double cheese press, with compound leverage, and (new implement) an improved one row carrot and general purpose drill, invented, improved, and manufactured by the exhibiter; an improved one row manure drill for carrots and general purposes, invented by E. H. Clerke, Esq., of Shepton Mallet, and improved and manufactured by the exhibiter.

Joseph Thackey, of Doncaster, Yorkshire.

(New implement) a four horse power patent peg thrashing machine with straw shaker, and (new implement) a three horse power patent peg thrashing machine, invented by Joseph Atkinson, of Braham Hall, and manufactured by the exhibiter; (new implement) a double blast corn dressing machine, invented and manufactured by the exhibiter.

Isaac Tyson, of Selby, Yorkshire.

A fixed steam engine, manufactured by the exhibiter,; a portable thrashing machine, with a fan to dress the corn at the same time, improved and manufactured by the exhibiter; (new implement) a corn mill for grinding agricultural produce into fine meal, invented, improved, and manufactured by the exhibiter; a horse-rake, manufactured by the exhibiter; (new implement) a turnip-drill, improved and manufactured by the exhibiter.

Edward Upfill, of Smithfield, Birmingham, Warwickshire.

A wrought-iron field gate, invented, improved, and manufactured by the exhibiter; a wrought-iron field gate, and a wrought-iron farmers' field gate, invented and manufactured by the exhibiter; (new implement) an improved lime screen; (new implement) an improved sand screen, and an improved gravel screen, invented, improved, and manufactured by the exhibiter. A four-bar sheep hurdle; some sheep hurdles; a length of wrought-iron hare-proof fence, with spike top; two lengths of wrought-iron hare-proof fence, with round tops; a length of wrought-iron fence; a length of fence suitable for poultry and cattle; a length of strong cattle fence; a length of trellis-work, fixed in the ground as a hurdle; a wrought-iron fold hurdle, 9 feet long, on wheels; two flat-bar fold hurdles; an improved sheep hay rack, covered in; a wrought-iron one-seat garden chair; a two-seat wrought-iron garden or lawn chair; a three-seat garden chair; a four-seat garden or lawn chair; a garden stool; a wire tree guard, in two halves; two strong tree guards, in two halves; two tree guards, in two halves; a wrought-iron horse hay-rack; a wrought-iron corner hay-rack; a cast-iron corner manger; three roll peg lattices; a wrought-iron verandah or arch, in two halves; a flower-pot stand, with three shelves; a flower-pot stand, with four shelves; a wire garden chair; iron and wire trainer for creeper; a garden roller; a tree support, with slide and joint-ring; a round wire flower-pot stand, in two halves, three shelves; a wrought-iron cow crib, for fodder for cattle; and a garden gate; invented and manufactured by the exhibiter.

Edward Weir, of 351, Oxford-street, London.

(New implement) two portable wrought iron liquid manure pumps and stand, a portable wrought-iron liquid manure pump for tank, and (new implement) an improved draining level, invented and manufactured by the exhibiter; a workman's draining level, manufactured by the exhibiter; two nut wrenches for agricultural machines, invented by R. Smithson, of London, and manufactured by the exhibiter; (new implements) two chlorine gas generators, invented by Frederick Leopold Smith, of Westminster, and manufactured by the exhibiter; a garden drill, invented by Sir John Sinclair, and manufactured ay the exhibiter; five different sized metallic churns, invented by Mr. Johnson, of London, and manufactured by the exhibiter; two rolls of iron wire sheep netting, and four rolls of iron wire rabbit netting, manufactured by the exhibiter.

James and Co., of 243, 244, 245, Whitechapel Road, London.

A 3-ton weighing-machine, for weighing loaded carts, live cattle, &c., a 21-cwt. weighing-machine, an 11-cwt. weighing machine, and a 6-cwt. weighing-machine, with pen for weighing sheep, pigs, &c., invented by Wm. Clarke, of London, improved and manufactured by the exhibiters; a 21-cwt. weighing machine, for weighing live cattle and farm produce generally, invented by M. George, of Paris, improved and manufactured by the exhibiters (this machine obtained the prize at Derby, Southampton, and Shrewsbury).

Cottam and Hallen, of Winsley-street, Oxford-street, London.

An iron pug mill, invented by George Cottam, of Winsley-street, and manufactured by the exhibiters; a tile machine, in-

vented by John Hatcher, of Benenden, improved and manufactured by the exhibiters; a haymaking or tedding machine, manufactured by the exhibiters; (new implement) a winnowing or corn-dressing machine, invented and improved by Samuel Wheatley, of Radcliff, and manufactured by the exhibiters; a weighing machine (this machine was awarded a prize at the society's meeting at Liverpool), a bruising machine for grain; an oilcake crusher, a saw table and boring machine, and a seed and manure drill for one row, invented and improved by G. Cottam, of Winsley-street, manufactured by the exhibiters; two serrated chain harrows, invented by Mr. James Smith, of Deanston, improved by G. Cottam, of Winsley-street, manufactured by the exhibiters; a rickstand for wood bearers, and cycloidal tooth grubber, invented by G. Cottam, of Winsley-street, manufactured by the exhibiters; two patent sack holders, invented by G. Gilbert, and manufactured by the exhibiters; a draining level, invented by Mr. S. Paine, of Llanelly House, Carmarthen, improved by G. Cottam, of Winsley-street, and manufactured by the exhibiters; an assortment of weed extractors, invented by J. Hall, of Cambridge; two sack trucks, and two dynamometers or draught gauges, invented by George Cottam, of Winsley-street, and manufactured by the exhibiters; six different-sized metallic churns, invented by Johnson, of London, and manufactured by the exhibiters; an odometer, or land measurer, invented by George Cottam, of Winsley-street, and manufactured by the exhibiters; a corn and seed planter, invented by Mr. Nicholls, of Bourne, and manufactured by the exhibiters; a liquid manure pump and stand, improved by George Cottam, of Winsley-street, and manufactured by the exhibiters; a rheiocline, or patent spring bedstead, invented by Edward Cottam, of 32, Great Portland-street, London; and a garden chair, manufactured by the exhibiters.

Dean, Dray, and Dean, of 3, Arthur-street East, near London Bridge.

A four-horse power thrashing machine, a one-row turnip and manure drill, and (new implement) a cesspool and tank cleanser, invented and manufactured by the exhibiters; a hand corn mill, invented by H. Silvester, of London, manufactured by the exhibiters; a hand dibble, invented by Nicholls, of Lincoln, manufactured by the exhibiters; a universal crusher, invented and manufactured by Ryland and Dean, of Birmingham; a chaff cutting machine, a pump for agricultural purposes, a garden engine, and a cottager's range, invented and manufactured by the exhibiters; and a circular pig trough, manufactured by Smith, James, and Co., of Leamington.

John Franklin, of 10, Lucas-place, Commercial-road East, London, and Henry Franklin, of Marston, near Ampthill, Bedfordshire.

A patent machine for the manufacture of all kinds of draining tiles, pipes, and bricks, and (new implements) two different sized patent machines for pugging and screening clay, invented and improved by the exhibiters, and manufactured by John Finny, of Blackwall, London.

Mr. Charles Miles, of 96, Great Russell-street, London.

(New implements) two improved field-gates, (new implement) an improved entrance gate, (new implement) a small gate for an entrance, (new implement) a latch for a gate, a working model of a wind vane, (new invention) a model of a labourer's cottage, (new implement) a model in explanation of the joints and brackets of roof guttering, (new implement) a working model of swing door, invented by the exhibiter; and specimen of early wheat.

John Tulloh Osborn, of 10, King-street, St. James's, London.

(New implement) a locomotive beam engine for ploughing and general agricultural purposes, for canal haulage and ferryage; and (new implement) a locomotive beam engine for ploughing and warping, in combination with the preceding; invented by the exhibiter, and manufactured by William Carwood, of 9½, Back Church-lane, Whitechapel, London.

Joseph Paul, of Thorpe Abbots Hall, near Scole, Norfolk.

(New implement) a patent deep draining and subsoil raising machine, a model of the same, (new implement) a patent plough for filling up the drains, a model of ditto, and (new implement) a patent machine for deep subsoiling and pulverizing the land, with a model thereof; invented, improved, and manufactured by the exhibiter.

John Whitehead, of Preston, Lancashire.

(New implements) three different sized tile-making machines, invented and manufactured by the exhibiter; (new implement) a thrashing machine, with horse-gearing for two horses; and (new implement) a thrashing machine for four horses; invented and manufactured by the exhibiter.

William Williams, of Bedford, Bedfordshire.

A set of patent four-beam diagonal iron harrows for seeds, a set of patent four-beam diagonal iron harrows for general purposes, a set of patent four-beam diagonal iron harrows, a set of patent two-beam diagonal iron harrows, a pair of patent diagonal iron harrows, a set of three-beam diagonal iron harrows, a set of patent four-beam light diagonal iron harrows for grass land, and a patent horse rake, invented by Samuel Taylor, of Cotton-end, and improved and manufactured by the exhibiter —a prize of £5 was awarded at Southampton in 1844 for the horse rake; a wrought-iron scuffler and scarifier, invented by Sanders and Williams, of Bedford, and manufactured by the exhibiters; a patent wrought-iron plough with two wheels, invented and manufactured by the exhibiter; a three-knife chaff engine, with registered improvements, invented by the exhibiter and Samuel Taylor, of Cotton-end, and improved and manufactured by the exhibiter; a mill for grinding beans or peas, invented and manufactured by the exhibiter; a wrought-iron horse hoe, invented, improved, and manufactured by the exhibiter; a wrought-iron horse hoe, invented by Richard Harkes, of Mere, and improved and manufactured by the exhibiter; three different sized machines for making draining pipes and tiles, invented by Sanders and Williams, and improved and manufactured by the exhibiter (a prize of £25 was awarded to this machine at the Northampton-meeting, 1847); and a set of improved trussed whippletrees, invented by Egerton Harding, of Old Springs, Market Drayton, and improved and manufactured by the exhibiter.

John Adams, of Selby, Yorkshire.

A pipe and drain tile machine, invented and manufactured by the exhibiter; a washing and wringing machine and mangle, improved and manufactured by the exhibiter; and a roller for agricultural purposes, manufactured by the exhibiter.

Thomas Richards, of Taunton, Somersetshire.

A three-horse power horse works and intermediate motion complete, a three-horse power thrashing machine, with striking clutches complete, (new implement) a hand draining pipe and tile machine, invented, improved, and manufactured by the exhibiter; a chaff-cutter with three flat knives on fly-wheel, improved and manufactured by the exhibiter; and a one-horse power horse works, with intermediate motion complete, invented, improved, and manufactured by the exhibiter.

William Sawney, of Beverley, Yorkshire.

A corn dressing or winnowing machine, a hariff and blowing machine, a blowing machine, a family mangle, and an improved scythe, improved and manufactured by the exhibiter; and a collateral box hive for bees, invented by Thomas Nutt, Esq., of Moulton Chapel, and manufactured by Marwood Watson, of Beverley.

William West, of Leicester.

A corn and turnip drill, and (new implements) two hand seed-drilling machines; invented and manufactured by the exhibiter.

George Yeates, of Asenby, near Thirsk, Yorkshire.

A horse rake adapted for hay-raking, and a horse rake adapted for corn land and twitch; invented and manufactured by the exhibiter.

George Smith, of Great Smeaton, near Northallerton, Yorkshire.

A single-horse cart for agricultural purposes, and a cart suitable for all purposes, capable of being drawn by one or two horses; invented and manufactured by the exhibiter.

Thomas Gibson, of Beverley, Yorkshire.

A waggon adapted for general farming purposes, with pole and shafts and iron arms; a single-horse cart for general purposes, with patent arms, to carry 30 cwt.; and a wrought-iron drag harrow, to work with four horses; manufactured by the exhibiter. A pair of wrought-iron harrows, with 50 teeth, adapted for each tooth to cut every 1¾ inch; and a turnip scarifier; invented and manufactured by the exhibiter.

Mary Cartmell, of Liverpool, Lancashire.

A four-knife hay and straw cutter; a three-knife hay and straw-cutter; and a mill, fitted up in brass, for crushing oats, beans, Indian corn, &c.; invented by Thomas Cartmell, of Doncaster; improved and manufactured by the exhibiter (this mill received the Royal Agricultural Society of England's prize of £3 at Liverpool, in July, 1841). A large mill, for crushing oats, beans, Indian corn, &c.; invented by Cartmell, of Doncaster; improved and manufactured by the exhibiter. A double turnip-cutter for sheep and cattle; invented by John Cartmell, of Liverpool; improved and manufactured by the exhibiter. A mill for crushing oats, beans, barley, Indian corn, &c.; invented by Thomas Cartmell, of Doncaster; improved and manufactured by the exhibiter; and a sack-holder; invented by Mr. Gilbert, of St. Leonards; manufactured by the exhibiter.

Thomas Gibbs and Co., the Seedsmen to the "Royal Agricultural Society of England," and to the Honourable Boards of Agriculture of England and Sweden, corner of Half-moon-street, Piccadilly, London.

Grass Seeds for Meadows and Pastures.—Samples of mixtures for laying down land to permanent meadow or pasture, with a proper proportion of permanent clovers, selected and apportioned to suit the nature of the various soils, attention being particularly paid to early growth, produce, nutritive qualities, reproductiveness, and permanency. Samples of mixtures for irrigation or water meadows, composed of those kinds of grasses which experience has found to succeed the best, and the natural habits of which especially fit them for it. Samples of mixtures for upland sheep walks, composed of the varieties the habits of which especially fit them for elevated situations, where other kinds of grasses would not succeed. Samples of mixtures for park and field lawns, especially adapted to those portions of parks or pastures nearest to mansions and other conspicuous parts, or for field lawns. Samples of mixtures for renovating old swards, for sowing over land already laid down in grass, which is either exhausted from being mown too often without having a due supply of manure, or when the plant is thin, caused by drought, partial failure of seeds, or other circumstances, in order to renovate it and supply the deficiency of plant. Samples of mixtures for garden lawns or grass plots, having none but the finer kinds of grasses, all those which are likely to grow large or coarse being carefully omitted. Specimens of the plant and seed of the tussac grass from the Falkland Islands.

Agricultural Seeds.—Barley, beans, cabbages, carrots, clovers, flax or linseed, furze, gorse, or whin, gold of pleasure, hemp (English), kohl rabi or hungarian turnip, mangold wurtzel, maw seed, millet, mustard (white and brown), oats, parsley (large field, for sheep feed), peas, potatoes (sorts), rape or coleseed, rib grass, lamb's tongue, or upright plantain, rye (common and St. John's day), sainfoin, ditto milled, spurry, tares, turnips, wheats, a collection of field and kitchen peas and beans; a general assortment of agricultural seeds; several hundred dried specimens of grass, clover, wheat, oats, barley, rye, beans, peas, &c., &c.

Thomas Taylor, of Banbury, Oxfordshire.

A patent inflated-air-seat saddle, for riding, with a moveable pannel; a patent moveable-pannel saddle, for riding; invented, improved, and manufactured by the exhibiter. A registered bit for riding and driving bridles; invented and improved by the exhibiter, and manufactured by Samuel Hudson, of Birmingham; and a model of a portable self-acting safety shade, to prevent horses shying or running away; invented and manufactured by the exhibiter.

Edward Jarman Lance, of Blackwater, near Bagshot, Surrey.

A collection of Lance's granulated manures, invented and manufactured by the exhibiter; specimens of soils at the sites of agricultural meetings of the Royal Agricultural Society, arranged by the exhibiter; a geological map of England and Wales, invented by J. A. Knipe, of Bruton-street, Pimlico; a geological map of the British Isles and part of France, invented by J. A. Knipe, of Bruton-street, Pimlico; specimens of the mineral matters that are taken up as food by growing crops; a hand seed machine (model one-third the size), invented by John Bennett, of Farnham, improved and manufactured by the exhibiter; specimens of the disease to which corn crops are subject, grown by the exhibiter; specimens of corn, the effects of labour and manure, on a poor sand soil, grown by the exhibiter; the bane and the antidote of English Farming, an allegorical representation; agricultural buttons, with the device of R.A.S.E., invented by James Pool, London; a hand dibbling machine, invented and manufactured by Dalrymple Crawford, of Birmingham (this machine obtained the prize of £5 given by the Royal Agricultural Society at Newcastle-upon-Tyne); a hand dibble, manufactured by D. Crawford, of Birmingham; marking-ink powders, for sacking, invented, improved, and manufactured by L. J. Cooper, of Leeds; agricultural pens, and ink-powders, invented, improved, and manufactured by L. J. Cooper, of Leeds

George Bruce, of Liverpool, Lancaster.

Specimens of patent black, blue, red, green, and stone-coloured varnish, and a specimen of prepared machinery oil, invented and manufactured by the exhibiter.

Frederic A. Carrington, of 10, Henrietta-street, Covent Garden, London.

A model of about three thousand square miles of England; a model of ground, showing a village and portions of a nobleman's estate; and a model of part of the town of Dundee, invented, improved, and manufactured by the exhibiter; a geological map of the British Isles, invented, improved, and manufactured by James A. Knipe, of Clapham.

Edward Wagstaff, Gordon Castle, near Fochabers, Morayshire.

(New implement) a model of a portable sheep cot, invented by the exhibiter, and manufactured by James Henderson, of Fochabers, Morayshire.

George Gibbs and Co., Seedsmen, &c., to the Royal Agricultural Department of Belgium, and Corresponding Member and Seedsmen to the Agricultural Society of Zeeland, in the Netherlands, 26, Down-street, Piccadilly, near Hyde Park Corner.

Meadow and pasture grass seeds; sample of mixed grass seeds for renovating old grass land; a collection of seeds of the natural grasses; dried specimens of various grasses. Mangel Wurzel—Long red, long yellow, long white, or sugar beet, orange, or yellow globe, red globe, white globe. Swedish Turnips—Ashcroft swede, tankard swede (this is a pure swede), Nottingham purple-top moss swede, Laing's swede, Skirving's swede, true purple-top swede, G.G., Matson's swede, purple-top, Pain's Kentish hardy green crown swede, Oxford green crown swede. Common Turnips—Hybrid green crown yellow, G.G., Dale's hybrid, purple crown hybrid yellow, purple crown imperial yellow bullock, green crown yellow Scotch bullock, yellow tankard, white, red, and green tankard turnips, white, red, and green globe turnips, early stone or stubble do., purple kohl rabi, or Hungarian turnip. Carrots—Large white Belgian, large Altringham, large short orange, or superb, long orange, long Surrey; parsnip, large cattle. Rape or Cole Seed—Large Lincoln, dwarf Kentish. Cabbage—Large drum-head, large early emperor, thousand headed, or Poitou; chicory, for sheep feeding, burnett, sainfoin, milled seed; parsley; white mustard. Rye Grass—Italian, dark Italian, improved perennial, Stickneys, Russell, festuca loliacea, common or annual Scotch. Clovers—True perennial dwarf red of the meadows, cow grass, common red, white Dutch, English white; creeping yellow, or red suckling; yellow trefoil; Bokhara, or sweet millelots; scarlet, or trifolium incarnatum; Alsike hybrid; South American, or medicago maculata; lucerne, spurry, furse or gorse, broom; flax, or linseed; camelina, gold of pleasure, an oil plant; tussac grass, from the Falkland Islands. Wheats—Red chaff white, Le Couteur's Belle Vue

talavera, April or spring, Russell white, Eley's gigantic, chidum, Chevalier, Mr. Fisher Hobbs's red marygold; other sorts; a collection of wheats in ear and straw; do. of barley, do.; do. of oats, do. PEAS—Early Jersey grey, nine-podded. TARES—Early racer winter, common winter, large gourd spring, common spring, white; lupins for field use to plough in. RYE—St. John's day, Tyrolese, or giant, common.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.—Mr. Garrett, of Leiston, exhibited as usual a full assortment of all the different machines for which his works are celebrated; drilling machines of all varieties, patent horse-hoes, and patent thrashing machines; and in each of these different classes he obtained a prize. The patent bolting thrashing machine, which received the Society's prize last year at Northampton, and also in 1846 at Newcastle, has again been the successful implement in competition with no less than forty-seven others. The testing of these machines was so minutely and correctly effected by the judges, that they took an extra day on Tuesday the 11th, and withheld the prize until it was clearly ascertained by an indicator what was the exact amount of steam power expended in working the different machines whilst performing a stated quantity of work. After this severe trial, it certainly does clearly show that this machine, having received the first prize for three years in succession, is of a character superior to any other. There is also attached to this machine a new invention of Messrs. Garrett for shaking the straw, so that all loose kernels, leaf, or loose rubbish, are thoroughly separated from the straw; this addition occupies a very small space more than the machine, independent of a shaker, and is so complete and perfect in its mechanism that it requires very little driving power; it is said to do the straw shaking thoroughly, for not more than one man's power off the driving machinery; to perform this important part of the work, which has not been done cleanly by hand labour, the efficiency of the machine was acknowledged by all. We also observed that Weller's patent tile machine was a great attraction to visitors: it makes pipes and tiles of all sizes with rapidity and precision, causing an immense saving in the cost of production. Messrs. Garrett, who are the sole manufacturers of this machine, have made great improvements in the part which carries out the tile, and performs the cutting off into lengths. The judges again awarded a medal to Garrett's patent horse-hoeing machine, which may now be said to have obtained for itself a well tried character as one of the established implements of utility, and which no good practical farmer will be long without; this makes the sixth prize awarded to this implement by this society, and proves that the good arising from the use of this implement has more than realized the anticipation of the judges at Liverpool in 1841. The immense collection of implements exhibited by Messrs. Garrett, consisting of chaff-cutting machines, pateut iron rick stands, turnip cutters, field rollers and clod crushers, lever drag rakes, linseed and cake crushers, grinding mills, winnowing and dressing machines, attracted as usual a full share of attention and admiration of the visitors.

DEEP-DRAINING AND SUBSOIL-RAISING MACHINE.—Of all the implements exhibited at the Great York Meeting there was probably none that excited more attention than the Patent Deep-draining and Subsoil-raising Machine, the invention of Mr. Paul, of Thorpe Abbotts, Norfolk, of which a model only was shown, but which we understand is in actual operation on Mr. Paul's farm in Norfolk. He has proved that, with the power of three or more horses, a drain may be cut, so as to leave the sides and bottom quite clean, to a depth varying from three to five feet. The soil taken out during the operation is brought to the top, thrown aside, and may be equally spread over the surface, if necessary. To the scientific observer it was obvious, and, indeed, it was remarked by one of our most intelligent agriculturists, that it was calculated to effect a complete revolution in heavy land farming; particularly when used in connexion with another machine invented by the same gentleman, and applied to the purpose of deep subsoiling and pulverizing the land. Never, perhaps, was so small an amount of horse-power found capable of producing such extraordinary results. Mr. Paul had the honour of a long and interesting interview with His Royal Highness Prince Albert, to whom he explained the nature and operation of the machines.

GENERAL MEETING OF THE ROYAL AGRICULTURAL SOCIETY AT YORK.

The general meeting was held at the Guildhall, and was more numerously attended than usual. The Earl of Yarborough presided.

The Earl of CHICHESTER, in a brief speech, expressed the opinion which the Society entertained of the liberal manner in which they had been received in York, and concluded by moving a vote of thanks to the Lord Mayor, corporation, and citizens of York, on three separate grounds—first, for the great accommodation afforded by them to the society; secondly, for their bounteous and munificent hospitality; and thirdly, for that active co-operation which enabled the society to transact the vast amount of business on its hands without difficulty or confusion.

Sir M. W. RIDLEY seconded the motion, which was carried unanimously.

Mr. SHELLEY, as the representative of the stewards of the implement department, moved a vote of thanks to the local committee, of which Mr. G. Hudson was the chairman, and praised highly the exertions which they had made, and their ready co-operation with the society in providing all requisite accommodation.

Mr. KINDER, as the representative of the stewards of the stock department, concurred with Mr. Shelley that greater attention could not have been paid, and he thought the society was deeply indebted to the local committee for the earnest and practical manner in which they had carried out the views of the council, and for the facilities which they had provided in every department.

Motion carried unanimously.

The Hon. Capt. D. PELHAM, R.N., moved, and Mr. C. BARNETT, of Stratton Park, seconded, a vote of thanks to the railway companies who had treated the society in so liberal a manner as regarded the conveyance of stock and implements, and who had provided every accommodation for the convenience of passengers.

The Noble PRESIDENT felt some difficulty in putting this motion, inasmuch as he himself was the chairman of one of the companies referred to (Manchester, Sheffield, and Lincolnshire). Still he hoped that the motion would be carried as unanimously as its predecessors, not only because thanks were justly due to these railway companies, but also because he hoped this expression of their thanks would induce the few companies who had stood aloof to join them in future; and thus not only not deprive themselves of the advantages which accrued from the increased traffic stimulated by these meetings, but also not deprive the agriculturists in their locality of a chance of competition upon equally inexpensive terms (Hear, hear).

Carried unanimously.

Sir J. V. B. JOHNSTONE moved, and Mr. JOHN BOOTH, of Killerby, seconded, a vote of thanks to Mr. H. Stafford Thompson, who had so liberally surrendered the use of his land for the trial of implements (Hear).

Mr. SHELLEY could not help taking that opportunity of remarking that for five years he had been, on behalf of the society, officially called upon to superintend the arrangements of, and watch the proceedings on, the trial grounds; and without detracting from the merits of his predecessors, he could fairly say that on no occasion had he met with greater courtesy, with more ready co-operation, or with greater facilities, than from the gentleman to whom they proposed to award a vote of thanks. That gentleman had placed his land for the trial both of heavy and light implements entirely at the disposal of the society, and was not merely passive, but evinced the

greatest anxiety, regardless of any inconvenience to himself, to carry out the practical views of the stewards and judges (Hear, hear).

Carried unanimously.

Mr. SHAW (of London) moved, and Mr. THOMPSON seconded, a vote of thanks to Professors Johnston and Simonds, for the kindness and ability which they had evinced in delivering lectures before the members of the society.

Mr. SHAW took that opportunity of referring to the great improvement on the former proceedings of the society, by the selection of a subject for lecture of more immediate practical utility to the farmers, and which having been attended by so large a number of the members of the society, must at once stamp the value. The lecture upon the diseases of cattle, delivered by Professor Simonds before the members of the society, in December last, at their rooms in Hanover-square, was one of the most useful they had ever listened to, and he had heard the lecture now adverted to spoken of in terms of high approval. He then dwelt on the importance of the application of veterinary science to inquiries connected with diseases of stock, and mentioned that in the course of that morning he had been informed by Mr. Hudson, of Castleacre, that he had received a letter from a large flockmaster in Norfolk, stating that he had lost twelve score of sheep affected by the small-pox — a disease which in England is of a novel character, and which has been imported. To meet and to check the ravages of this disorder, which was alike extensive and fatal, Captain Stanley Carr had stated that inoculation of the lambs was practised in the countries where the disease prevailed extensively, and it would appear that this course had been successful. Professor Simonds had given attention to the subject, having been called in on the first appearance of the disease in this country; he had since published a book on the subject, which he, Mr. Shaw, could recommend as calculated to be of great practical use to the flockmaster. They were likewise indebted to Professor Johnston, who had so admirably depicted the great advantages which would eventually result from those inquiries by means of which more exact knowledge would be acquired, especially chemical knowledge, of the application of theoretical and experimental science to agriculture.

Mr. BATES, of Kirklevington, called the attention of the Council to the letters which he had addressed to them on what he conceived to be an important subject, and he would particularly invite the attention of the Earl of Chichester, who was the president elect for the ensuing year, to it.

The motion was then carried *nem. con.*

The Earl of CHICHESTER then moved, that the best thanks of the meeting be given to the Earl of Yarborough for the able manner in which he had discharged the duties of his office during the past year. As president elect he felt himself fortunate in having had before him so illustrious an example of the way in which those duties ought to be performed, and in endeavouring to fulfil the honourable duties of the office which they had conferred upon him, he should, and he was sure they would, be well satisfied if he could successfully imitate the example set him by Lord Yarborough (loud cheers).

Mr. THOMPSON seconded the motion. There was no member who could fail to be struck with the uniform kindness and attention evinced by the noble earl. Whilst active in the extreme, he was yet quiet in demeanour, and the satisfactory manner in which he got through the vast amount of business imposed upon him by his official position was beyond all thanks and all praise (loud cheers).

The Earl of YARBOROUGH returned thanks. He had done no more than attempt to fulfil, to the best of his powers, the important duties which they had called upon him to take charge of. If he had succeeded in meriting this proof of their kind regard, he must also remind them that it was owing to the kind co-operation of the members of the society. He was happy to find that the period of his year of office had terminated so successfully, and it was highly gratifying to him to find that the whole meeting had passed off not only to the satisfaction of the members of the general society, but also, as far as he could ascertain, to the satisfaction of the members of the Yorkshire Agricultural Society, to whose liberality the Royal Agricultural Society of England were deeply indebted (cheers).

The meeting then broke up.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A SPECIAL COUNCIL was held at the Society's house in Hanover-square, on the 24th of June; present, the Earl of Yarborough, President, in the Chair; Duke of Richmond; Lord Portman; Sir T. D. Acland, Bart., M.P.; Sir M. W. Ridley, Bart.; Sir C. Lemon, Bart., M.P.; Sir J. V. B. Johnstone, Bart., M. P.; Mr. Bramston, M.P.; Col. Challoner; Mr. E. Denison, M.P.; Mr. B. Gibbs; Prof. Sewell; and Mr. Shelley.

The President having informed the Council of the intention of H. R. H. Prince Albert to be present at the York Meeting of the Society, the Council took into consideration the requisite arrangements to be made for the reception of His Royal Highness.

A MONTHLY COUNCIL was held on Tuesday, the 4th July; present, the Duke of Richmond, K.G., in the chair; Earl of Egmont; Earl of Lonsdale; Lord Portman; Hon. Captain Dudley Pelham, R.N.; Sir M. W. Ridley, Bart.; Sir C. Lemon, Bart., M.P.; Sir J. V. B. Johnstone, Bart., M.P.; Sir R. Price, Bart., M.P.; Mr. Raymond Barker; Mr. Barnett; Mr. S. Bennett; Mr. H. Blanshard; Mr. Bramston, M.P.; Mr. Brandreth; Mr. Burke; Colonel Challoner; Mr. F. Cherry; Mr. Druce; Mr. Hodgetts Foley; Mr. Fisher Hobbs; Mr. Hudson, M.P.; Mr. Hudson (Castleacre); Mr. Jonas; Mr. Pendarves, M.P.; Mr. Chandos Pole; Mr. Pusey, M.P.; Mr. Ayshford Sanford; Professor Sewell; Mr. Shaw, London; Mr. T. Turner; and Mr. H. Wilson.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, presented the Report of the Committee for the previous month, from which it appeared that, on the last day of June, the current cash-balance in the hands of the bankers was £1,294, which the Chairman explained to be made up as follows:—York balance, £497; arrears received, £127; compositions, £501; available balance for current purposes, £169.

Analysis of Plants.—On the motion of Mr. Pusey, M.P., seconded by Lord Portman, the Council voted the grant of a sum not exceeding £300, to be placed at the disposal of the Analysis Committee, for the prosecution of Professor Way's analyses of the Ashes of Plants, in continuation of the results on that subject already published in the Journal of the Society. Mr. Pusey took that opportunity of remarking, that valuable as the researches published in the Journal had hitherto been, on inquiries connected with Geology, Entomology, Chemistry, and other sciences connected with agricultural improvement, he was happy to say that a field of inquiry,

no less interesting and important to the farmer, on the anatomy, physiology, functions, and diseases of live stock, had been opened by the valuable lecture already delivered before the members in London by Professor Simonds, and which was then in the press, illustrated with numerous woodcuts, for the new number of the Journal; and he had no doubt that Professor Simonds's lecture, about to be delivered at the York meeting, would be found no less important and interesting than its predecessor.

Draining.—Lord Portman favoured the Council with an interesting statement of the result of his draining 40 acres of meadow-land, 24 years ago, with young Scotch fir boughs, obtained as the thinnings of his plantations. The boughs were cut in June and July, when the trees were full of their sap and turpentine; and being laid longitudinally in the drains of the meadow, at a depth of 3 feet, to within 18 inches of the surface, they were covered over with clay and turfed down. His lordship having recently had occasion to make a cut across the meadow in question, for hydraulic purposes, he had the satisfaction of finding that, after a period of 24 years, every drain was found to be doing its work admirably; and the boughs, instead of being decayed, were found in perfect preservation, and the wood had become firmer in the substance, and harder to the cut of the knife.—Mr. Fisher Hobbs had the pleasure of fully corroborating Lord Portman's statement of the value of fir boughs for the purpose of draining in strong clay or marl, some of his own drains, formed of them, having stood from 15 to 20 years. He had found, however, that, unless the boughs were cut while full of turpentine, the wood would soon decay. He took that opportunity of correcting what he thought a misapprehension as to the character of Sir John Tyrrell's pipe-tiles, exhibited to the Council at the last meeting as having been choked up with a fibrous vegetable substance. Those pipes were not furnished, with collars, as he had seen it stated, but with sockets, a difference which he thought essential in reference to the facility or otherwise of the entrance of the fibrous substances into the pipes through their joinings.—The Hon. Captain Dudley Pelham thought it was a matter almost of indifference in that case whether the pipe-tiles were furnished with sockets or collars, for he had found the insidious fibrous substance gain an easy entrance into, and completely fill up and stop, even pipe-tiles of his own, which had been completely and imperviously cemented together at their ends.

Mr. Agnew, of Manchester, presented to the Council a statement connected with his large painting of the Society's Country Meeting; Mr. Sievier, of Henrietta-street, Cavendish-square, a statement of Analyses and Products of the Bituminous Shale, or Schistus, of the Island of Portland; the Author of "A Review of the Agricultural Statistics of France," a copy of that work; and Messrs. Fullarton and Co., of Edinburgh, three parts in continuation of their "Rural Encyclopædia;" for which the thanks of the Council were ordered.

The Council then adjourned over the York Meeting to the Weekly Council in London on Tuesday, the 25th of July.

NEW MEMBERS.

Archer, Wm., Tulliebardine Cottage, Auchterarder, Perthshire
Gibbons, Stephen, Brocklesby, Great Limber, Lincolnshire
Graham, Carolus, Strawan, Crieff, Perthshire
Hall, Benjamin, Hanley Castle, Upton-on-Severn
Marr, William, Yarm, Yorkshire
Wood, John, Coroner of York
Preston, Cooper, Flasby Hall, Skipton, Yorkshire
Wells, John, Armyn, Boothferry, Yorkshire.

MITCHELL, ON THE FALSIFICATION OF FOOD.

At the present time, when every precaution is taken to preserve the public health by effective drainage and ventilation, there does not appear to be much apology needed for the production of a work with the above title; more especially as it is well known that much disease is induced by the use of damaged or adulterated provisions.

The recent investigations of Baron Liebig would seem to confirm the nearly universal opinion that diseases, such as fevers, small pox, &c., are communicated from one person to another by a putrefactive process, in the same way that yeast communicates the changes which are going on in itself to a solution of sugar or malt.* "It is a fact that subjects in anatomical theatres frequently pass into a state of decomposition, which is communicated to the blood in the living body. The slightest wound with instruments used in dissection excites a state which is often dangerous or even fatal. The fact, observed by Magendie, that putrefying blood, brain, bile, eggs, &c., laid on recent wounds, cause vomiting, lassitude, and death after a longer or shorter interval, has never yet been contradicted. It is a fact that the use of several kinds of food, as flesh, ham, sausages, in certain states of decomposition, is followed in healthy persons by the most dangerous symptoms and even by death." To many of the above sources of disease our poor are too often exposed, by the temptation held out to them of making cheap purchases. For if substances in a state of putrefaction can cause sickness when brought into external contact with our bodies, they must do so much more certainly when taken into the stomach. We know of no object more worthy of the strictest attention of our local or general government, than to prevent the sale of damaged fish or butcher meat, as they will by this means assuredly stop one fertile source of disease and death amongst the poor. The more wealthy part of our community, who from choice feed upon decayed cheese and putrefying game, must (as they deserve) bear the penalty of their folly.

This part of the subject is but incidentally men-

* Animal Chemistry, 3rd Edition.

tioned in the interesting little work, the title of which we have placed at the head of this article. The danger of using adulterated food is well worthy our closest attention, as it is equally injurious to health; and the fraud is often so skilfully managed as to defy the research of the government officers, and also of the chemists specially appointed to assist in the investigation. No one, who has not paid some attention to the subject, can form any idea of the shameful extent to which adulteration is carried. The perfection to which the science of chemistry has attained is almost to be regretted, as it has pointed out "new sources for more effectually disguising any alteration in the article, and rendering the sophistication almost imperceptible to most of the usual chemical tests."

It would be difficult, indeed, to say how respectable dealers can reconcile to their consciences the use of deadly poisons in articles of every-day use as food. Such additions as sand and yellow ochre to tobacco are child's play, compared with the evils which follow the addition of chalk, bone earth, powdered flints, and plaster of Paris to flour; alum, chalk, magnesia, blue vitriol (sulphate of copper) and white vitriol (sulphate of zinc) to bread; *cocculus indicus* to ale; and a mixture of alum and copperas, together with a multitude of other equally injurious substances, to London porter. We are assured by the author of the work now before us, that ale and porter are often manufactured without a particle of malt and hops; and we cannot forbear giving a few extracts from the chapter on "beer and its adulterations," for the benefit of our anti-teetotal friends; and whilst we admit ourselves to be of that belief, we cannot but sigh for the return of those days when every housewife, or at least every farmer's wife, brewed her own ale.

"It is well known that publicans keep two distinct classes of beer, *old* and *mild*. These are requisite to suit the taste of their various customers. Now, old beer is much more expensive than new, inasmuch as it is requisite to store such beer for many months, to bring it to the necessary standard, thus involving a great outlay of capital; but the publicans of the present day have a ready way of converting new or mild beer into old beer (beer of any age) in a few minutes. This is effected by the addition of a small quantity, according to the taste of the publican, of sulphuric acid (oil of vitriol); and the beer, however new, acquires instantaneously the hard or old flavour, or rather the acidity of the old flavour without the aroma; for genuine old beer possesses a peculiar aroma, and is not essentially acid to the taste, as is that which has been treated with sulphuric acid." And more than this,—"If the brewer or publican happens to have a quantity of stale beer on his hands, the half spoiled and sour beer can be immediately converted into a new or mild beer by the simple addition of chalk, carbonate of potash, or carbonate of soda."

But it is impossible to extract every interesting or amusing paragraph, so thickly are they sown in the work before us. It would also be foreign to our purpose to enlarge upon the disgraceful abominations which are unscrupulously mixed with many articles of foreign growth; but we cannot help telling our readers that to such an extent is the "struggle for life" carried amongst one class of dealers, that they actually find it worth their while to imitate common black pepper *by pills of linseed or mustard.* We are all aware of the adulteration of coffee with ground chicory; this is now a very antiquated style of things, for it appears that a kind of bean is now grown in England, which so closely resembles coffee, that it is mixed with that substance in the unground state. We shall therefore confine our remarks principally to agricultural products, and their adulterations. To begin with flour. The substances employed in its adulteration are the following:—potato starch, bean, pea, and rye flour, chalk, bone earth, powdered flints, and plaster of Paris. The first four of these additions are not positively injurious, but merely reduce the flour in value to the purchaser; whilst the fraud is so managed that the article differs little in appearance from the genuine. The earthy substances, such as chalk or powdered flints, are injurious in every sense of the word; and severe should be the punishment of those, who by their use render the staff of life pernicious.

As flour is adulterated by the substances above mentioned, we have also to look for them in bread, and they are in general more difficult to detect than in simple flour. In England the practice of adulterating flour with potato starch is not common, but the practice of introducing boiled potatoes into bread is almost universal amongst bakers. In it there is nothing unwholesome, in fact the bread is more palatable; but it is a decided fraud, for the bread made with potatoes is not so nourishing as wheaten bread, and is made far cheaper than if flour alone were used, and ought therefore to be sold comparatively at a lower price. The ordinary run of bread made with potatoes is not so nourishing by at least 20 per cent., as that made with good wheaten flour.

The most common adulterations in England are alum, carbonate of ammonia, carbonate of magnesia, chalk, blue vitriol, sulphate of zinc, bicarbonate and carbonate of potash, plaster of Paris, and pipe clay. Of these, alum is not so injurious as some of the materials to be hereafter treated of; but its daily use is apt to disorder the stomach and produce costiveness. Its use is therefore much to be con-

demned, more especially as it is only made use of to disguise the bad quality of the flour employed in the manufacture of the bread it is found in. The action of many of the substances enumerated is so mysterious that it is difficult to say what function each performs. "A great number of them seem to have a greater tendency to check than to excite fermentation, and that which appears peculiarly incomprehensible is the small quantity of sulphate of copper necessary to produce the marked effect which follows its use. In order to set this question at rest, M. Kuhlmann has made a number of experiments to prove the specific action of copper, alum, &c. He has proved in all his experiments, that the presence of the smallest quantity of the sulphate of copper strengthens the dough and makes it rise better. Sulphate of copper has a very energetic action in the fermentation and rising of bread. This action is shown in a forcible manner even when the bread contains no more than 1-70,000th of its weight, which is scarcely equal to one part of metallic copper in 300,000 of bread." Sulphate of zinc is employed for the same purpose as the last mentioned adulteration, but it does not act in so energetic a manner. Both of them are very poisonous, and the use of them is much to be deprecated.

The above are only a few of the many adulterations which are daily practised, not only in those articles we have enumerated, but in milk, cider, wines, coffee, tea, chocolate, sugar, honey, lozenges, cheese, anchovy sauce, catsup, salad oil, &c. Indeed, the subject presents human nature under a most painful aspect; though whether this struggle for life arises from the difficulty of obtaining a living, or from too great a hurry to obtain riches, we are at a loss to say. In either case, whilst we lament the evil, we look around in vain for a remedy; as many of the adulterations are so skilfully managed as to defy detection, though we again say that it is a mystery how men can reconcile their consciences, whilst mixing with our daily food poisonous substances, and thus placing themselves on a level with some of the wretches in human form lately brought to light in Paris.

PEAT CHARCOAL THE BEST DEODORIZER.

In 1845 we brought before the public the facts which had come to our knowledge of the value of peat charcoal in its natural state as a fertilizer of the soil. It was then doubted, because Liebig and his followers had laid it down that all plants were indebted to the atmosphere for the carbon they contained—in fact, that inhalation gave to the general structure their mass of woody fibre, amounting, when converted into carbon, to from 40 to 50 per cent. of the whole. *We doubted this assumption;* and since, our doubts have been set at rest; for the Royal Agricultural Society offered a prize for an essay on the subject, and almost every farmer in the country now knows the value of charcoal *as a manure,* and that which was smiled at then, is not only admitted, but practised now.

We feel no small gratification in having been the first to draw general attention in England to this most valuable fact; and we feel the same as regards the extraordinary value of *peat charcoal as a deodorizer*—but not only a deodorizer, but the producer of a manure, the value of which we believe there is scarcely any means of estimating.

In our columns of this day will be found a letter from Mr. Jasper Rogers, to which we beg particular attention. It is impossible to contemplate the facts set forth without feeling that a revolution may be worked in our agricultural community. If the result stated be effected on an extended scale throughout the country, no one can say what the advantage will be; and too much credit cannot be given to Mr. Rogers, to whose intellect, zeal, and unceasing efforts in the cause of science and humanity, we owe the discovery and development of these invaluable facts.—Mark Lane Express.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—In 1845, when I first brought forward the advantages of *peat charcoal* as a fertilizer, your most valuable publication led in urging the trials and proof by practice of what was then deemed to be a very doubtful theory. Liebig had declared that plants depended upon the atmosphere for the quantum of carbon they contained, and it was then *the fashion* to bow the head to his name and his doctrine; but, happily, fashions change, even in science. Now, every farmer in the kingdom manures with carbon to the utmost extent he can; and the rich and verdant green of the plant, even as it begins to peep above the surface, truly tells the fallacy of the "*fact*" that plants *inhale through their leaves* all the carbon, which supplies them with some 40 to 50 per cent. of their solid substance. To be the humble means of awaking public attention to so valuable a reality, and to see such happy results, is in itself a rich reward. Let me hope for a richer still, in now begging the trial and proof of the inestimable advantage of *peat charcoal as a deodorizer of human excretiæ;* a means of instantaneously depriving that most noxious matter of all its noxiousness, and instantaneously taking up, absorbing, and *holding* its gases and other products; all

combined possessing the highest capabilities known for the general fertilization of the soil. My anxious researches have been rewarded with perfect success. Peat charcoal, properly prepared and intermixed in sufficient proportion with human excretæ, converts the whole into a dry, perfectly inodorous mass, capable of being packed in sacks, and transported without the slightest annoyance, by any conveyance. The effect of the intermixture is *immediate*, and the results of my discovery may, I believe, be thus summed up.

Human excretæ, now the cause of disease and death in cities, may be made the profitable producer of healthfulness and life to the country at large. Its removal will no longer be an evil dreaded by all around; and it will become not only the source of wealth to the agriculturist, but of considerable profit to the citizen. When given to the land, the preparation contains every essential for fertilization. The combination is such, that its benefit cannot be over estimated—phosphates, sulphates, gluten, &c., and ammonia in great abundance, are *interwoven*, it may be said, into every grain of charcoal. Carbon, the staff of vegetation, is filled with all the other essentials for luxuriance, and yields the whole to the plant in the most beneficial form; while, in giving out its aqueous and other matter, it becomes ready to receive another charge. Every shower of rain yields a further supply of ammonia and salt; and every grain of charcoal thus becomes a reservoir, not alone of manure, but of moisture. No limit, therefore, can be assigned to the benefit produceable by such a fertilizer.

Some time since I announced the leading particulars of these facts in your valuable columns, and I am now happy to add that the discovery has been thoroughly proved. It has been patented for the United Kingdom, and "The Irish Amelioration Society," who possess the whole right for the preparation of peat fuel and charcoal, &c., in Ireland, is making every preparation for the introduction intc this country of prepared peat charcoal, which can be delivered at such cost as will permit its most economical use, throughout the whole country, for sanitary, agricultural, and other purposes. And when it is recollected that the employment of the miserable labourers of Ireland, in producing this most valuable commodity from the now waste and useless bog, will be the means of saving them from future famine,—perhaps death, and raise them *now* from discontent, recklessness and consequent crime—to independence and comfort, the combination of so many blessings to the country at large cannot fail to give pleasure and gratification to all who feel for Ireland's miseries, and who properly think of England's good.

I have the honour to be,

Your most obedient servant,

London, July 22. JASPER W. ROGERS.

THE SMALL POX IN SHEEP.

(FROM THE MARK LANE EXPRESS.)

The agricultural community and the public at large are much indebted to his Grace the Duke of Richmond, for having brought forward the subject of the "small pox" in sheep in the House of Lords, and claiming from Government the adoption of speedy and energetic measures to prevent its extension, for the particulars of which we refer to our parliamentary report. We consider the advent of this disease a national calamity, unless some effective means for staying it be discovered. We have elsewhere inserted the report of a discussion upon the subject at the Thetford wool fair, and also an account from the *Norwich Mercury* of the active measures taken by the city authorities at Norwich to prevent animals affected with the disease being exposed in the market for sale. It will be seen that, but for the diligence of the inspector, Mr. Smith, a number of sheep, sufficient to spread the disease very extensively, would have been intermixed with the animals penned at Norwich market. The disease is highly contagious, and may be held to be fatal in its consequences to the extent of 50 per cent.; and the effects are greatly reducing upon those which recover. It is not merely the direct injury which may be experienced from the loss of a number of animals, but it involves a consequential damage from the almost insurmountable impediment to the growth of grain, which any serious destruction of our flocks would interpose. The sheep is becoming daily of greater value to us, not only in the supply of meat of a most nutritious and useful character, but also as an invaluable assistant in the cultivation of our inferior lands, which, without the turnip and the sheep, would be comparatively valueless. The comparison may seem a strange one, and in some measure absurd, but we affirm that, if it were necessary to legislate against the advent of foreigners whose minds were politically diseased, lest they should innoculate our population with their poisonous doctrines, it is equally necessary to legislate against the introduction of a noxious disease amongst our "woolly people," as the northerns term them. This plague, unfortunately, has reached us; it has been traced to some animals which were imported last year. It is, therefore, not like the potato disease, a calamity the source of which is wholly unknown. There are two points to which the attention of the Government should be imme-

diately directed: first, to the obviating further mischief by the importation of more diseased animals; and secondly, to the preventing an extension of the disease by the sale of animals already tainted. This is not a question merely affecting individuals: it is a question of public policy of great national importance, and in reference to which the most energetic measures should be adopted.

The object of opening the ports to the importation of foreign cattle, is to afford a larger supply of food for the people. How will such a course be effective, if we import diseases which check the home supply to a much greater extent than any amount that can be imported? If foreign sheep are to be introduced alive, let them be slaughtered at once; and, if necessary, let a law be passed, inflicting a penalty upon any persons having them in their possession alive more than a certain number of hours after they are landed, or taking them to any other than certain places or yards provided for their reception. To put them through the ceremony of an inspection is a very inefficient course of proceeding. The animals may be tainted, and display no external symptoms of disease, it being, according to Professor Simonds, in his work recently published on this disease, about ten days from the time of the contact of a sound animal with a diseased one before the first symptoms appear. To guard against the extension of the disease by means of such animals as are already affected, it would be far better to buy them up at the public expense, than to suffer the serious loss which must result from an extension of the malady—which we hold must follow, unless some such means be adopted. It is stated in the report in the *Norwich Mercury*, to which we have before alluded, that "there were about 100 (in Norwich market) which appeared rather doubtful, and they were permitted to remain, while 200 intended to be penned were doubtless in consequence of the appointment of the inspector, driven over the hill without being offered for sale," and will, in all probability, carry the disease into other fairs and markets, and infect many places in their journey. We have been informed of an instance where some tainted animals, which were only twelve hours in a field, communicated the disease to sheep in an adjoining field, through open hurdles placed in the fence to stop some gaps in the hedge. Mr. Simonds says, in his essay on this subject, "The pecuniary losses to the agriculturist, arising from the breaking out of the malady amongst his sheep, is not simply confined to the number of deaths; for even if the animals pass safely through the attack, their weak and emaciated condition renders them of little worth, and the subsequent care and attention which they require for their perfect restoration are considerable, and necessarily attended with great expense. According to Sacco's statement, 'impregnated ewes are certain to abort their lambs:' the loss which such a circumstance would cause can scarcely be estimated." The fatal effects and consequences of the disease are fearfully depicted in the following extract from the same essay, with which we shall close our remarks:—"It is difficult to speak practically with regard to the number of deaths likely to take place in a flock from the introduction of the natural ovine pox, for great variations are observed in its malignity. We fear that in the least destructive instances the mortality cannot be estimated at less than 25 per cent., while in numberless cases this is more than doubled. It appears by Mr. Fielder's letter that nearly half of his sheep which were attacked fell victims, and Mr. Vitet says this is a frequent consequence. The deaths in Messrs. Statham's and Weall's flocks may be put respectively at 34 and 38 per cent., and we are informed that other persons have lost considerably more than this proportion. Mr. Mayer, in an article already quoted, remarks that 'it is not unusual for nearly the whole flock to be swept away.' Sacco makes a similar statement, and Capt. Stanly Carr observes that in a malignant attack, 'the certain destruction of the greater part of the flock may be anticipated;' and again, that in a village contiguous to his estate, where contagion was allowed to take its course, there was not, to the best of his recollection, a single sheep left alive. To these statements it is unnecessary to add more, as they too plainly show the devastating effects of the scourge."

THE SMALL POX IN SHEEP.

Sir,—I know you feel highly interested in all matters relating to agriculture, and hesitate not to ask a small space in your widely-circulated journal for the purpose of making a few observations on that direful malady, the small pox in sheep, which I am sorry to say has just made its appearance in this neighbourhood. In doing which, however, I do not wish to create unnecessary alarm, my object being merely to put agriculturists and others on their guard as to admitting any fresh lot of sheep on their farms without having first ascertained the existence or non-existence of the disease in question, which I think they will be enabled to do by attending to the few following hints. The leading symptoms of small pox are, a separation of the infected animal from the flock, a peculiar arching of the back, a drooping of the ears, a closing of the eyelids, amounting in some cases almost to blindness, and a pustular eruption, extending more or less over all parts of the body, but particularly those destitute of wool or covered with hair only; such, for instance, as

the cheeks, the skin inside the arms and thighs, the under surface of the tail, udder, &c. There are other minute symptoms, which it is not necessary to mention, the above being the most prominent ones, and such as any person, without a knowledge of anatomy, can detect. The disease is highly contagious and infectious—so much so, that a lot of sheep have been known to contract it in consequence of having been penned by the side of others in a diseased state, and that without any commixture. The deaths in all cases, where it has broken out, have never been less than 20 or 25 per cent., and in some instances I believe they have increased from this amount to 40, or even 45 per cent.—a fact in itself of sufficient importance to put us on the alert, not only with regard to individual pecuniary loss, but looking at it in a national point of view. In the lot of sheep I have seen in this neighbourhood, amounting to eighty, there are at present eighteen dead; but there are evident signs of the disease progressing with the others, and the result will, I fear, exhibit as many fatal cases as have already occurred elsewhere. In conclusion, I would advise those who wish for further information on this subject, to peruse a work lately published by Mr. J. B. Simonds, Lecturer on Cattle Medicine, &c. at the Royal Veterinary College, which contains an account of the first introduction of the disease into England, with many other interesting and minute particulars respecting it.

I remain, Sir, your most obedient servant,

THOMAS WELLS.

Castle Meadow, Norwich, June 29, 1848.

—Norwich Mercury.

SMALL POX IN SHEEP.

DEAR SIR,—Permit me to occupy a small space in your valuable columns for the insertion of a few remarks upon the disease *(variola ovina)*—sheep pox—which is now appearing in several flocks in the immediate neighbourhood of this city. In other localities visited by this disease, it being introduced into England in September last, the mortality has been as much as 80 per cent., and seldom less than 25 per cent.; at the same time injuring materially the wool, removing the flesh, and consequently reducing the value to a great extent of those that recovered.

It will readily be conceded, that the propagation of this malady will be fraught with serious loss to flock proprietors. It will also deteriorate the quality of the meat; whilst a corresponding high price, mistrust, and probably injury, will be experienced by consumers. It therefore behoves all persons connected with these matters, either directly or indirectly, to use every exertion for arresting its extension and preventing its progress.

The disease is both *infectious* and *contagious*, and when it appears in a flock, very few escape its ravages. Of its infectious character, experiments have shown that healthy sheep placed in sheds with variolous ones for a few hours have taken the malady, and exhibited it in its severest type. It is premised, therefore, that healthy sheep penned on our hill, or on other markets, near variolous ones, will contract the disease while thus exposed for sale.

I have under treatment, at this time, some half-bred Down sheep bought off Norwich Hill, three weeks since, all affected, some severely, with this malady, supposed to receive the infection in the market. Variolous sheep having been already, on several occasions, exposed there for sale, and were exhibited the day these were purchased.

Of its *contagious character* there is also no doubt, and it is a fact worthy attention, that the ichor of the papula and matter of the pustule *will retain its power of reproduction* for some weeks. The irritable condition of the skin invariably causes the affected animals to rub themselves against the hurdles, or other bodies by which they are confined, depositing the matter thereon, which dries up and adheres to the substance on which it is placed, and would probably inoculate any sheep for many succeeding weeks, that might be placed in these hurdles. I would suggest, therefore, that it would be desirable that no time should be lost in washing the hurdles already used on the hill, and smearing them with chloride of lime, or some other disinfecting agent.

The mayor and city magistrates, with laudable zeal for the protection of the public, have issued bills cautioning persons (it being an indictable offence) from exposing affected sheep on the hill; but I am fearful, notwithstanding this measure, many will find their way there. The disease is difficult to discover in its first stage, but is as communicable in the earlier as in the later periods of its attack.

If apology were wanting for occupying so much space in your necessarily limited sheet, the fact afforded by the best statistical information on the subject, that in the United Kingdom no less a quantity of sheep exists than 50,000,000, representing money value estimated at more than £67,000,000 will be deemed, I hope, sufficient.

The losses sustained within the last seven years, by this disease amongst cattle, have been enormous, and the attention of government should be drawn to the subject, with a view to prevent the diseased beasts or sheep from being landed at our out-ports. Unless this be done, the exertions of the local authorities will, I fear, not be sufficient to prevent either the pleuro-pneumonia in beasts, or the variola ovina in sheep from being propagated amongst the stock of our farmers and graziers.

I am, yours, &c.,

WILLIAM SMITH.

Veterinary Establishment, Pottergate-street.

—Norfolk Chronicle.

A RUN INTO BOHEMIA—A DAIRY DISTILLERY.—Touching the farming of the country, we had no opportunity of seeing anything of the internal economy of a Saxon farmhouse; but our friend, Dr. Krause, was kind enough to take us to see a dairy farm, which is worth a passing observation. It is one of the royal estates, and is situate on the left bank of the Elbe, a little below the city. It is the completest thing

of the kind we have ever seen. The estate consists of about 900 Saxon acres, 700 of which are tillage, and 200 meadow land. The dairy stock consists of 200 milch cows, but taking oxen, calves, and bulls, the average number on the farm is generally about 400 animals in all. Fifty oxen and eighteen horses, are required for the work of the farm. The cow houses form a very substantial square building, extending round a court-yard nearly an English acre in extent. The interior of the buildings is lofty, and the floor sloping, so that the liquid manure is conveyed rapidly away. The roof is supported by long columns of stone pillars, and a flagged pavement gives a dry and clean passage round the entire building. One wing is appropriated to a piggery. It is of the same substantial character—there were but fifty pigs in it when we were there, but it is capable of holding a much larger number. The sties are substantial compartments of stone walls five feet high, and the drainage is so effective, that we never found a pig sty so free from smell. But there was a thorough draft through it by open windows placed above the walls of the sties. This allowed of a perfect circulation of air, without exposing the precious lives of the dear animals to the baleful influence of draughts—the pigs never complain of catching cold, or having rheumatism. There were shutters also to the windows—a precaution which the rigorous winter of Saxony may render necessary. The cow-houses, as well as the piggery, were equally well ventilated. To this establishment Dresden was much indebted for its daily milk. But there is another branch of it which deserves notice, and that is the *distillery*. The soil of the farm is suitable for potatoes, which flourish in it. There are 450 bushels of potatoes washed, boiled, and mashed daily, and mixed with malt. The mash is carried by machinery into an upper room, to be cooled. It is then conveyed to a lower chamber, where it is left three or four days for fermentation, and after the spirit has been extracted from it, the refuse is given to the cattle. This part of the establishment is under the direction of a scientific distiller, Herr Ferdinand Krabes. The machinery and apparatus is of the very best description, and by the process adopted, 97 per cent of spirit is got out of a given quantity of material which formerly yielded only 80 per cent. This amount was first suggested as obtainable, by the Chemist Falkman ; and Herr Ferdinand Krabes had recently been honoured with a prize from some scientific society, for having realized in practice the obtaining of so high a per centage. This intelligent gentleman gave us a lucid statement of the efforts made to get the devil alcohol out of the innocent potato, and the beneficent grain. He enlarged on the quantity of spirit produced by this process. The farm pays 11,000 dollars rent, and the product of the distillery 14,000 dollars yearly in duties. The proprietor is a gentleman named Portius, who began as a simple cow-keeper, and has reared this great establishment by his own industry, talent, and integrity. For the encouragement of the desponding, we will relate an anecdote which we heard of his beginnings. His friends had lent him two thousand dollars—the season failed, and he was well nigh ruined. Seeing their money gone, his confidence forsook him. He feared to face them, and was almost ready to terminate his earthly speculations in a cowardly, but most conclusive manner. His wife however counselled him to renewed exertions—she admonished him against the rash deed, and reminded him that there was a God above the seasons. He listened to her advice, and here he is. Moral—Supply it according to conscience, dear Constant. The cattle in these sheds never go out. We saw a stout young bull, who had passed the whole term of his life within the walls. His first frisky manifestations of the bovine joys arose beneath this roof, and his last bellow was doomed probably to die away within its purlieu. The cows were chiefly of the Holstein breed, and the machinery was from Berlin. The corn was ground by machiney, which was worked by *a bullock tread-mill*. This tread-mill was a circular inclined plane, the floor of which was crossed pieces of wood, which gave the beasts a stepping place, the inclination was very slight, and as the bullocks walked upwards, the floor moved down. By this means malt was bruised for the distillery, oats were bruised, and chaff cut for the horses (fifty in number). We have omitted to state that the number of people employed is sixty constantly, and above three hundred in harvest time.—Western Times.

LONDON FARMERS' CLUB.

MONTHLY MEETING OF THE COMMITTEE OF MANAGEMENT.

MONDAY, July 3.

Present—Messrs. E. Aitcheson, W. Bennett, R. Baker, G. Emery, W. Fisher Hobbs, T. Owen, J. Pain, W. Shaw of London, and J. Thomas. GEORGE EMERY, Esq., in the chair. The minutes of the last Meeting were read and confirmed, and signed by the chairman of this day.

The following gentlemen were elected members :—
J. Francis, Britains, Hornchurch, Essex.
T. Hawkins, Assington, Boxford, Suffolk.
J. G. Maxwell, Cohon House, Crediton, Devon.
A. Ridgway, Barnstaple, Devon.

Some other names were read for the first time.

On the proposal of Mr. Fisher Hobbs, seconded by Mr. Shaw, a committee of the following members was appointed to inquire into the present destructive ravages of the small-pox in sheep, and to suggest such steps as they might think best for preventing the extension of the disease either by the exposure of infected animals at public markets or otherwise :—

E. Aitcheson.
R. Baker.
R. B. Harvey.
W. Fisher Hobbs.
W. Shaw.

A variety of other business was also gone into.

WEALD OF KENT FARMERS' CLUB.—The usual monthly meeting was held at the Bull Inn, Cranbrook, on Wednesday evening; Mr. Springett, the president, in the chair. The subject for the evening's consideration was, "Thin and Thick Sowing," adjourned from the last meeting, which led to an interesting and useful discussion. The following resolution was ultimately adopted :—"Resolved, That thin sowing, as usually understood, is not generally suitable for the lands in this district; but that, in the opinion of the club, the following are the rates of seed which may be beneficially adopted. On light, dry, highly cultivated soils, a bushel and a half (drilled); on medium soils, two bushels; on wet stiff clays, two bushels and a half; also for oats, three bushels on the best soils, four bushels on medium soils. That although in particular instances large crops appear to have been grown from a small quantity of seed, this result seems to have arisen from peculiar circumstances, from which it would not be safe to draw any general conclusion." The subject for discussion at the next monthly meeting is, "The best way of managing and applying farm-yard manure."

TENANT-RIGHT.

(FROM THE MARK LANE EXPRESS.)

The readers of the *Mark Lane Express* will, we feel persuaded, give us credit for having perseveringly and continuously advocated the principle of compensation for unexhausted improvements to tenants on quitting their occupations, and designated by a term neither new nor unknown in the agricultural world—namely, tenant-right. Feeling convinced that tenant-right is based upon the immutable principles of common sense and justice, against which no sophistry, however ingenious, and no influence, however preponderating, could long maintain their destructive sway, we hailed with satisfaction the appointment of a select committee of the House of Commons to take evidence on the subject which had already been prominently brought before the House for two sessions in succession, through the bills introduced by Mr. Pusey, whose zeal in the cause demands the highest meed of praise. The committee consisted of

P. Pusey, Esq., M.P. for Berkshire, Chairman
Sir J. Trollope, M.P. for Lincolnshire
C. N. Newdegate, Esq., M.P. for Warwickshire
J. W. Henley, Esq., M.P. for Oxfordshire
C. N. Colville, Esq., M.P. for Derbyshire
J. G. Hayter, Esq., M.P. for Wells, Somerset
W. Miles, Esq., M.P. for Somersetshire
Sir C. Leman, M.P. for Cornwall
Earl of Arundel and Surrey, M. P. for Sussex
J. E. Dennison, Esq., M.P.
C. A. Moody, Esq., M.P., Somersetshire
A. Stafford, Esq., M.P. for Northamptonshire
Hon. E. P. Bouverie, Esq., M.P., Renfrew
H. N. Burroughs, Esq., M.P., East Norfolk
Hon. J. E. S. Wortley, Bute
H. Drummond, Esq., Surrey.

We are free to confess that the complexion of the committee did not inspire us with increased hopes of a successful issue; but in proportion as the committee may be regarded as disinclined to favour the question, so must we consider the result to be triumphant.

The Committee examined a great number of witnesses from most of the counties in England, men of the highest character and standing as farmers and land-valuers, by whom a mass of evidence has been furnished, which will shortly be published, and which will expose in all their deformity the position of difficulty in which the tenant-farmer generally is now placed, and the impediments which interpose to prevent him from pursuing his avocation with that confidence and spirit essential to enable him to raise food for the people and give full employment to the labourer. When the evidence was closed, the Chairman prepared a series of resolutions; these were varied and re-cast by Mr. Bouverie, were further amended by the Committee, and finally settled as their report. The original resolutions by the Chairman and the report itself are subjoined.

The parties who object to tenant-right may be divided into two classes: first, those who—like a correspondent who signs himself "A Tenant," but who we believe to be no tenant at all—consider it to be a "*nostrum*," and "*absurd in the extreme*," and therefore oppose it altogether; and secondly, those who admit the principle, but are opposed to legislation upon it, being desirous of leaving the matter to mutual arrangement between landlord and tenant.

The report of the committee—which, as will have been seen, is constituted by parties themselves large landed proprietors, or deeply interested in land, many of them representatives of counties—puts the first class of opponents completely to the rout.

The rise, progress, and *modus operandi* of the "modern usage" compensation for unexhausted improvements, or tenant-right, is traced in the 4th, 5th, 6th, 7th, 8th, 9th, and 10th clauses of the report, and the effects are described as follows:—

11. "That this wider system of compensation to the outgoing tenant seems to be highly beneficial to agriculture, to the landlord, and to the farmer; to lead to a great increase in the productiveness of the soil, and to extended employment of the rural population."

12. "That the benefit arising from this system appears to be gradually becoming more extensively known and appreciated, and the system itself seems to be finding its way into other districts than those where it has hitherto been in force."

13. "That the improvements above mentioned, which are very generally required throughout the country, in order to develop the full powers of the soil, are greatly promoted by this system of compensation, and therefore it is highly important that all difficulties should be removed which stand in the way of its extension by the voluntary act of landlord and tenants."

Having thus confirmed the advantages of the system, and having expressed a decided opinion on the importance of its extension, the committee concur with the second class of objectors, and state—

14. "That any attempt to make its general introduction

compulsory would be met by great practical difficulties, and your committee rely for the general and successful adoption of the system on mutual arrangements between landlords and tenants."

They are, however, most anxious that no impediment should interpose to prevent the extension of the principle, and to that end say—

15. "That it seems very desirable to your Committee that estates under settlement should be endowed with every practicable privilege for their advantage which is attached to absolute property; and that persons having limited estates in addition to the ordinary leasing powers generally conferred on them, should be enabled, under proper precautions, to enter into stipulations of the nature of those above referred to, which at present it appears they cannot do."

16. "That the power to enter into such stipulations, binding on subsequent interests, might be advantageously made a general incident to leasing powers of land in settlement, by the aid of Parliament; and also be conferred on persons having certain limited interests in land."

Thereby confirming, to a certain extent, the opinion which we expressed last week:

"No measure would contribute so much to increase the employment of the agricultural labourer as an amendment of the law of real property, and putting the law of landlord and tenant on a better footing."

That the sanction given to the principle of Tenant Right by such a committee of landed proprietors, after an extensive and elaborate inquiry, will give a direct and immediate stimulus to it, cannot be questioned. This report may be regarded as the Bill of Rights of the tenant farmers: it lays the foundation of their future independence; it will raise them from the subservient state in which they have hitherto been held, and elevate the whole class to that position which will, in reality, entitle them to an appellation which has hitherto fallen very far short of reality—the independent British yeomanry. We are rejoiced to be enabled to announce that Mr. Pusey is preparing for the press a digest of the evidence, which will be speedily published in a compact form. Useful as such a book must be from the hands of any competent person, it will be doubly so when arranged by one who has given so much attention to the subject as Mr. Pusey has. We trust the tenant farmers as a body will give this the most easy proof of their support and approval of the question by each and every one possessing himself of a copy. The information which it will contain in respect to the customs of entry on farms, and the diversified modes of cultivation in the various districts of the country, will be both useful and interesting.

In respect to the difference of the law in regard to buildings erected for purposes of agriculture, and those erected for the purposes of trade, the committee passes a somewhat severe stricture upon the wisdom of landed proprietors, remarking—

18. "That this distinction does not appear to be supported by any *sound reason*, and your committee are of opinion that the tenant's privilege of removal, with respect to fixtures set up for trading purposes, should be extended to those erected for agricultural objects."

We may hope that this anomaly will at length be removed, and that the advantages which the manufacturer has long enjoyed will no longer be withheld from the farmer. We cannot account for the blindness of the landed proprietors themselves in this matter, as we most unhesitatingly affirm our conviction that they will be greatly benefited by such an amendment of the law.

RESOLUTIONS PROPOSED BY THE CHAIRMAN.

1. That various customs have prevailed immemorially in the compensation of outgoing tenants for acts of husbandry performed by such tenants in the ordinary course of farming, and for which the interruption of the tenancy has prevented them from receiving the usual return.

2. That such ancient tenant-rights vary in their nature and amount according to the time of quitting and the custom of the country; are more or less advantageous and certain in different counties; but could not conveniently be defined or altered by law.

3. That in Lincolnshire and some other districts a more recent custom prevails of paying the outgoing tenant, not for interrupted cultivation only, but also for uncompensated improvements, on the principle of assuming terms within which respectively the farmer may be regarded as having received back the amount of his outlay, with a profit thereon.

4. That the purchase of artificial food for stock upon arable farms does not ordinarily remunerate the farmer in the increased value of that stock, which would be fed at a loss but for the consequent improvement of the manure, and the profit thus arising in the larger yield of his corn.

5. That the purchase of artificial manure, a practice also of modern origin, is by the improved tenant-right recognized as a claim for compensation, to be spread over a short period of from two to four years.

6. That among more lasting improvements of the soil, (1) marling or claying, which renders light or fen land capable of producing good wheat, (2) chalking, which is equally necessary on many parts of the chalk hills themselves, and has been generally used on the Lincolnshire wolds, but often produces no advantage until after three years, and (3) under-draining, if performed exclusively by the tenant, are regarded as entitling the tenant to longer terms of compensation.

7. That all these improvements not only increase the production of corn, but of meat also, in a yet higher degree, by the growth of root crops; while the more durable improvements, being performed chiefly by manual labour, afford extensive employment to the rural population.

8. That farm buildings frequently require extensive improvements for the purposes of improved husbandry.

9. That according to the evidence of practical farmers,

the aforesaid improvements are more or less generally requisite throughout the country at large.

10. That although long leases might secure the tenant in making such improvements during the earlier period of his holding, land is generally held in England from year to year, or for short terms, while there appears no general inclination on the part either of landlords or tenants to fetter themselves by lengthening the term of the holding.

11. That although some of the more expensive improvements, as draining and building, are, if made at all, usually made by the landlords, a large number of landlords cannot afford to make them, however necessary they may be.

12. That according to the legal evidence before the Committee, owners with limited interests cannot grant tenant-right for improvement so as to bind their successors nor mortgagors, without notice to and apparently consent of the mortgagee, unless such covenants of compensation be supported by the custom of the country.

13. That such custom is slow in arising, as is shown among other evidence by a witness from Oxfordshire, in whose neighbourhood bones had been used as manure for 20 years, while his own was the first case of compensation for their application.

14. That such custom is uncertain and precarious during its growth, as appears clearly from the evidence respecting the custom of Kent, where the tenant is doubtful, after draining his farm, whether he will be able or not to obtain compensation therefrom.

15. That such custom is also tardy in attaining validity; as, according to other evidence, existence for 20 years must be proved to render it binding.

16. That while tenant-right for improvements has been proved to work well by encouraging such improvements, some defects have been pointed out in the mode of awarding the compensation, as well for tenant-right as for acts of husbandry.

17. That in the opinion of competent witnessess the compensation should be awarded not as at present in a gross sum, but in a detailed account, open to examination by the parties concerned.

18. That whereas in the event of disagreement the two arbitrators now decide the appointment of the umpire by lot, it would be desirable to secure an impartial umpire.

19. That where compensation for improvement is granted to the outgoing tenant, compensation for foulness of land, cross-cropping, and dilapidation is equally due to his successor.

20. That according to the unanimous evidence of the witnesses, it is cheaper for an incoming-tenant to pay reasonable compensation for improvements to his predecessor, than to enter upon a farm out of condition.

21. That it is desirable, as well for increasing the productiveness of the soil, as for the paramount object of widening the range of employment for the village labourer within his own neighbourhood, to render the principle of tenant-right for improvement general throughout England, by giving it prospectively the validity of a custom, subject however, as any other custom, to be dealt with and modified by mutual agreement between landlord and tenant.

REPORT.

The above resolutions were re-cast in their form, and very materially varied in their substance by Mr. Bouverie, and on his motion, after further amendment, the Committee adopted the following altered report:—

Your Committee find—

1. That different usages have long prevailed in different counties and districts of the country, conferring a claim to remuneration on an outgoing agricultural tenant, for various operations of husbandry, the ordinary return of which he is precluded from receiving, by the termination of his tenancy.

2. That this claim, which is called tenant-right, ordinarily extends to one or more of the following objects; to the crop which the outgoing tenant has sown and leaves in the ground; to remuneration, for the preparation of the soil for crops by tillage, for the straw, hay, and dung left on the farm, and for growing underwood.

3. That these local usages are imported into leases or agreements for the letting and occupation of land between landlord and tenant, who are presumed to contract with reference to such usages, unless the terms of the agreement, expressly or by implication, negative such a presumption.

4. That in some parts of the country a modern usage has sprung up, which confers a right on the outgoing tenant to be reimbursed certain expenses, incurred by him in cultivation, other than those of ordinary husbandry, above referred to.

5. That among such expenses are included the purchase of food for stock, the purchase of certain kinds of manure, and the draining, chalking, and marling of the soil; the result of all which outlays is, to effect an improvement of the soil, more or less lasting, and requiring more or less time to elapse before the increased productiveness, thereby obtained, reimburses the expenditure incurred.

6. That, except in the districts where this usage prevails, unless by express stipulation, the outgoing tenant cannot claim compensation for any of these improvements, however short may be the time between their completion and the termination of his occupancy.

7. That this modern usage appears to have grown out of improved and spirited systems of farming, involving a large outlay of capital, and to have been promoted by forms of agreement between landlord and tenant, whereby the former covenanted to give compensation for such outlay; which forms have been from time to time altered and enlarged, and are still extending themselves with the continued advancement of agriculture.

8. That these usages have gradually grown into general acceptance in certain districts until they have ultimately become recognised there as the custom of the country.

9. That, in practice, the compensation agreed to be paid by the landlord to the outgoing tenant, is paid by the incoming one.

10. That its amount is found by valuers, who ascertain the cost of the several improvements, spread that cost over a certain number of years within which each

kind of improvement respectively is supposed to repay itself, and then deduct from that number the time during which the tenant has enjoyed the benefit of the improvement.

11. That this wider system of compensation to the outgoing tenant seems to be highly beneficial to agriculture, to the landlord, and to the farmer; to lead to a great increase in the productiveness of the soil, and to extended employment of the rural population.

12. That the benefit arising from this system appears to be gradually becoming more extensively known and appreciated, and the system itself seems to be finding its way into other districts than those where it has hitherto been in force.

13. That the improvements above mentioned, which are very generally required throughout the country, in order to develop the full powers of the soil, are greatly promoted by this system of compensation, and therefore it is highly important that all difficulties should be removed which stand in the way of its extension by the voluntary act of landlord and tenants.

14. That any attempt to make its general introduction compulsory would be met by great practical difficulties, and your Committee rely for the general and successful adoption of the system on mutual arrangements between landlords and tenants.

15. That it seems very desirable to your Committee that estates under settlement should be endowed with every practicable privilege for their advantage which is attached to absolute property; and that persons having limited estates in addition to the ordinary leasing powers generally conferred on them, should be enabled, under proper precautions, to enter into stipulations of the nature of those above referred to, which at present it appears they cannot do.

16. That the power to enter into such stipulations, binding on subsequent interests, might be advantageously made a general incident to leasing powers of land in settlement, by the aid of Parliament; and also be conferred on persons having certain limited interests in land.

17. That the law, with respect to things affixed to the freehold, is different and more beneficial, as regards those annexations made for the purposes of trade, and those made for the purposes of agriculture; an outgoing tenant being permitted, in many cases, to remove the former when erected by himself, but not the latter.

18. That this distinction does not appear to be supported by any sound reason, and your Committee are of opinion that the tenant's privilege of removal, with respect to fixtures set up for trading purposes, should be extended to those erected for agricultural objects.

July 3rd, 1848.

BAKEWELL FARMERS' CLUB.

A meeting of this Club was held on the 5th June. Present—Mr. T. Gregory (in the chair), Mr. P. Furniss, Mr. J. Yates, Mr. R. Pursglove, Mr. W. Greaves, Mr. Walters, Mr. J. Lees, Mr. White, Mr. Scott, Mr. L. Furniss, &c.

Mr. L. Furniss was called upon by the Chairman to introduce the subject appointed for discussion, namely—"The best Rotation of Cropping the Light and Heavy Arable Lands, within the District of the Bakewell Farmers' Club."

Mr. Furniss said:—I consider the subject of the utmost importance to the farmer, especially the arable land farmer; so much so, indeed, that his success depends on a proper system of cropping his lands, whether light or heavy. My observations will apply to those soils, whether light or heavy, which can be made the most productive by variety of cropping, and not the rich grazing land which abounds to a great extent in the district. In my opinion it would be most profitable to the occupiers of such lands to allow it to remain in its present undisturbed position for the purpose of fattening cattle. First, I commence with the heavy land, of the descriptions above referred to. My remarks will apply to land thoroughly drained; for, be assured of the fact, unless the land requiring that operation be effectually drained, there can be no successful farming. First year: fallow, giving a liberal dressing of manure, sown with turnips, mangold wurtzel, or vetches; the turnips and mangold to be put in on the ridge system; vetches sown in drills, leaving space for hoeing betwixt the rows. Second year: wheat drilled, seeded with red clover and rye grass, the wheat to be hoed previous to seeding. Third year: clover cut for hay, the clover eddish to be eaten off with sheep, which is excellent for fattening, they at the same time manuring the land with their droppings. Fourth year: wheat drilled, and hoed the spring following. We cannot expect to grow red clover every fourth year, consequently I recommend the following mixture of seeds as a substitute every alternate course:—7 lbs. white clover, 2 lbs. cow grass, and 3 lbs. of trefoil, with 4 pecks of best rye-grass seed, to be pastured with cattle or sheep two years, making this a five years' course before fallowing. Best rotation on light lands of the district—First year: fallow, with a liberal dressing of manure for turnips. Second year: oats or barley (principally oats), drilled and hoed, seeded with artificial grasses as recommended on heavy lands. Third year: if red clover cut for hay, the clover eddish invariably eaten with sheep; if growing the third and fourth years, the above mixture of seeds, to be eaten off with sheep principally. Fourth year: oats or wheat; if oats, drilled and hoed; if wheat, the land to be well-pressed, as success in growing wheat on light lands depends in a great measure on the land being well pressed, giving solidity for the wheat to root in, which is so essential to the growth of that crop. It is presumed that the principal part of the turnips be drawn off the land in the above courses. If the above routine of cropping be strictly practised, I am of opinion it will be found the

most profitable to the arable farmer, whether on light or heavy land, in our part of the country. A naked fallow may be dispensed with, not having to grow two white crops in succession, and may be considered to approach the nearest to what may be termed a self-supporting system. Growing two or three white crops in succession is a pernicious practice except under very peculiar circumstances, for it not only exhausts the land to such an extent as to render it difficult to restore it to that degree of condition suitable for growing a remunerating crop, but fills it full of twitch grass and other weeds, exhausting the soil in the same proportion as the growing crops of grain, and rendering a naked fallow essential to enable you thoroughly to cleanse the land. The growth of green crops will enable the farmer to maintain on his farm the greatest amount of stock, thereby enabling him to produce a sufficient quantity of good manure to support the land in growing full average crops. I am fully convinced that the only way to enable the British farmer successfully to compete with the foreigner is to maintain on his farm the greatest possible amount of stock, especially sheep, as no animal enriches the land on which it feeds so much as sheep. The farmer should likewise fatten as great a number of animals on his farm as possible. It is a well-known fact that the enriching qualities of the manure we apply to the land depends on the kind of food the animal consumes which makes the manure. I am happy to perceive a growing disposition on the part of our landlords to give to their tenants every facility for pursuing a proper and successful rotation on their respective farms. Excessive game-preserving is an insurmountable obstacle to good farming; thanks to his Grace the Duke of Devonshire, such is not the case on his Grace's extensive estate in the neighbourhood of Chatsworth. It gives me pleasure to say agricultural improvement is making rapid strides on the Chatsworth estate under the able superintendence of S. Smithers, Esq., the noble Duke's agent, whose knowledge of agriculture is such as eminently to qualify him for the situation he holds, and whose greatest pleasure consists in using his influence in promoting the interests of agriculture. The improvements above referred to are the thorough drainage of the land requiring that important operation; the grubbing up of old, wide, crooked fences; the arranging and fitting up of new ones in straight lines, &c., &c., which is most pleasing to behold.

Honourable mention was made by Mr. Furniss of the Right Hon. the Earl of Newburgh, of Haslop Hall, and P. Thornhill, Esq., of Stanton Hall, for having destroyed the game on their respective estates. The course of cropping recommended to the Club by Mr. Furniss was generally approved.

Mr. Greaves thought two applications of the manure recommended on the light land better than giving the same quantity at one dressing; that is, giving the artificial manure to the turnip, and the farm-yard to the seeds.

The subject appointed for discussion at the next meeting is "The best Method of Harvesting the Hay and Grain Crops." To be introduced by Mr. Scott.

HUNDRED OF BASSETLAW — ITS EXTENT AND CAPABILITY.

East Retford, June 29.—This large and influential division of the county of Nottingham (of which the borough of East Retford forms the centre and the capital), contains 197,021 acres of land, of this, 136,969 consist of sand and alluvial soils, and 60,052 acres of clay and loamy soils. Of these 197,021 acres, the following are the purposes to which it is appropriated, viz., grass 58,000 acres; corn 110,000 acres; orchards and gardens 4,360 acres; woods and wastes 13,358 acres; roads and rivers 10,863 acres; and hop land 440 acres. Of the corn land the following are the divisions:—76,000 acres on sandy and alluvial soils, and 34,000 acres on clay and loamy soils. The portion appropriated to the growth of wheat is on the sand, &c., 19,000; on the clay, &c. 11,300; making a total of 30,300 acres. These, in ordinary years, will produce 131,260 qrs. of wheat, which after deducting 5,500 qrs. for seed, and 26,000 qrs. for home consumption, will leave a surplus of 99,760 qrs. for exportation to the manufacturing districts. On the sand lands 19,000 acres are appropriated to the growth of barley, which produce annually 85,500 qrs.; of this the greater part is used for the purposes of malting. On the clay soils there are about 5,000 acres of barley, which will yield an average of 22,500 qrs.; this latter, with some of the former, is principally consumed in the district, in the feeding of cattle, pigs, &c. The remainder of the soil under cultivation is thus appropriated: viz., in beans and peas 10,000 acres; in oats and skegs 17,000 acres; and in tares, &c. 3,300 acres. The bean land will give an average yield of 18,750 qrs., of which it is calculated 7,500 qrs. are consumed at home, and 11,250 qrs. are sent away. The number of horned cattle fed in the district amounts annually to 13,500; of this 4,750 head are consumed by the inhabitants, and 8,750 sent out of the country. The quantity of sheep yearly kept in the district is not less than 197,000, of which 78,800 are store sheep, and 118,200 are fatted into capital mutton. Of these latter the total number consumed at home are about 45,600, leaving 73,600 for the Yorkshire and Lancashire markets. The quantity of wool produced annually amounts to 492 tons, or nearly 40,009 tods. Of cheese is produced 240 tons (independent of home consumption); of butter 380,000 lbs.; of hops 164 tons; of apples and pears 1,183 tons; of plums, gooseberries, &c. 150 tons; and of potatoes 16,000 tons; and in the production of all these necessaries of life it is calculated that not less than a million of money is annually employed by the proprietors and occupiers of the soil.—Doncaster Gazette.

NEWCASTLE FARMERS' CLUB.

At the Monthly Meeting held June 3rd, 1848, William Anderson, Esq., V.P., of Bent House, in the chair the following gentlemen were elected members, namely:—Mr. Patrick L. Reid, Pelton Colliery, Chester-le-street; Mr. William Forster, White House, Gateshead; and Mr. Thomas Wardle, Cramlington.

Mr. W. Stephenson, Throckley House, brought forward the subject of which he had given notice, namely:—

On the relative Merits of Good, Bad, and Parsimonious Farming.

Agriculture (he said) was the first employment given to man by the Creator of the universe, when he was told that by the "sweat of his brow he should earn his bread;" we, have, therefore, no promise of plenty without cultivation. Although some countries bring forth almost spontaneously, yet the inhabitants are nevertheless far below us in the art of agriculture. Industry alone promotes peace and plenty; the want of this principle reduces every country to poverty, and its subjects to a state of destitution and discontent. In proof of this statement we need only refer to Ireland. I am aware that the value of agriculture has not been properly estimated; but I believe that the upright principles and perseverance of the farmers of England have in a great measure contributed to raise this nation to the proud position it now occupies in the eyes of the world. The cultivation of the soil, therefore, ought always to be an especial object of interest to all classes of society, because all are alike involved in sharing in its benefits, and hence should use their utmost efforts to assist in making it bring forth whatever it is capable of producing. It is lamentable to find that a great proportion of those whose incomes are depending entirely upon agriculture, should be so dilatory in making improvements, and, in too many instances, would rather let their estates go gradually to ruin then co-operate with an industrious tenant. One greathindrance, in this respect, is their unwillingness generally to grant leases; and some who do make them so complex and restrictive that it is impossible to carry them out with advantage to either party. The agents, too, are often very culpable.—For instance, when the landlord lives at a distance, or perhaps knows little about the value of the land, he gives them full power to manage his estate; yet how often do we see that power abused, and the enterprising and improving tenant obliged to quit, or proceed in the old fashioned course, without any means of redress. The system of letting farms by public competition is another serious drawback. Why do not the landlords place confidence in their agents, and allow them to value the different farms they may have to let, and offer them upon reasonable terms privately, so that industrious farmers with capital might have the preference? If the proprietors would be more liberal and reasonable in their demands, it would encourage the occupiers to take greater pains in the cultivation of the soil, and the results would then be equally beneficial. Such a change has already commenced upon the estate of one of the largest proprietors in this district (I allude to his Grace the Duke of Northumberland), and I trust his good example will soon be followed by many others. Let us just take a glance at some of the lands in this vicinity that are well managed; on such we find the landlords liberal, the agents conscientious, and doing what is right between parties. The tenants thus situated are respectable, not only thinking of their own interest, but that of the proprietors also. Generally speaking, farmers are a hard-working race of men, for they can only gain their living by the strictest industry, being obliged to work at all times and at all seasons. They must also give close attention to their business for several years, before they can become perfectly acquainted with the nature and properties of the soil committed to their care. I have frequently seen various blunders made in this respect; for in every locality the land varies, and it therefore requires a particular system of management; and the difficulty arises at the commencement, in the farmer not being perfectly acquainted with those properties when he enters upon his farm. Nothing can give an agriculturist greater pleasure than to witness the different stages of growth in his crops, especially when he has taken pains in the working of his land, and in the proper selection of seed for the different soils. In the Spring months how minutely does he watch the corn and tender grass shooting up their heads; his mind is elevated, and he looks forward with great delight to the approaching harvest, when he shall reap the reward of all his anxiety and toil. Without entering into further minutiæ, I shall proceed to show what I consider constitutes good, bad and parsimonious farming; and as my subject divides itself into three heads, I shall briefly make a few remarks upon each in succession.

1. *Good Farming.*—A good practical farmer commences his work in a methodical manner, having all his plans arranged long before operations are begun. In Autumn his first attention is directed towards the sowing of his seed, and advantage is immediately taken afterwards to the storing of his turnips; so that his cattle which are feeding may have their food sweet and good, at stated times, which he considers of the utmost importance towards their improvement; and also that they are plentifully supplied with straw, to keep them warm and comfortable. He also thinks it necessary to take some pains in classing them according to their different ages and size. During the Autumn the land intended for green crops and Spring sowing is effectually ploughed, letting it remain exposed all the Winter to the frost. When the weather sets in stormy, the thoughtful farmer is busily employed in collecting and carting manure to the most advantageous situations on the farm, to remain until applied to the land; also repairing roads, leading tiles for draining, &c.; he, therefore, always has plenty of work for his establishment. When the Spring arrives and the weather proves favourable, he can proceed without being obliged to do work which ought to have been done in the Winter months. After getting all his Spring corn sown, his attention is next directed towards his green crops, but he is careful not to turn the Winter-ploughed land over until properly dry, which afterwards he finds no difficulty in getting prepared. During the Summer months he still goes forward with the same spirit and energy; nothing escapes his notice, and his mind is constantly engaged; he rises early, has all his servants ready at the appointed time, to commence their different operations, such as working his fallows, cleaning his turnips and potatoes, &c.; and when the hay harvest arrives, not a moment is lost to make it secure, because he considers it is the most precarious crop he has to manage, particularly if it be grown to any extent. In addition to his ploughmen, he considers it will require for every two pairs of horses one spademan and four women, to enable him to carry on the Summer work with activity and success. The harvest is now approaching, and in order that the necessary preparations should be made, he first calculates how many labourers it will require to reap his corn in a proper time; and, secondly, insists upon having it cut low, by which he is enabled to procure a greater quantity of straw for making manure during the Winter. His stack-yard also is neatly finished—in general a sure emblem of a good farmer. Then, take a survey round the farm, and you will find it in proper order—hedges neatly trimmed, not occupying twice the ground necessary; all water-courses attended to, gates well hung and fastened, so that his cattle cannot take a ramble through the fields when they choose; all his implements of husbandry are kept in good repair and in their proper place. With such attention and care we cannot wonder, then, that he is successful; for you may be sure if small things are attended to, then greater and more important will not be neglected. Having thus finished his year's labour, he is enabled to look upon it with pleasure, because he is satisfied that by his judicious arrangements his farm is still improving, and he calculates that the value of his crops and the profit arising from his cattle are inducements for him to continue on with all the energy and perseverance he has hitherto exerted.

2. *Bad Farming.*—I am sorry to say that kind of farming is too often seen. A bad farmer cares not how or what way his land is cultivated. His work is always behind hand, and gone through without any regard to neatness or regularity. If I were to give you a minute description of his whole year's employment, it would occupy too much of your time, and I shall therefore merely glance at his different movements. During the Autumn and Winter months, instead of finding him engaged in making proper preparation for the Spring work, he will probably have his horses running out to grass, saving a few bolls of oats; and his ploughmen employed at work which ought to be done by spademen, thereby neglecting what is more essential to be done by his draughts. His young cattle are wandering in all directions over the farm, and those intended for feeding make little improvement, owing to the bad system of not supplying them regularly with food. He makes no preparation for the preservation of the turnips, they are left exposed all winter, and only taken up when wanted, which, in a wet season, proves very injurious to the following crops. The corn he sends to market is generally in bad condition, being full of weeds, which considerably depreciates its value. The seed sown in the Spring is done without any regard to the peculiarities of the soil. His horses are low in condition, and consequently unable to perform their work in an efficient manner. The servants, finding their master neither economical or industrious, invariably fall into the same indolent habits. The Summer work is not better managed; his green crops are all overgrown with weeds; his hay is considerably injured owing to want of proper attention; the fallows are neglected in their ploughing and cleaning; the few quickens gathered are most likely thrown into the fence, or perhaps stopping the water course, which, being without a sufficient outlet, overruns the land and seriously damages the crop. The harvest is got through in the same indolent manner, without due respect to manage-

ment, or saving of expense; wasting the corn, and leaving a great portion of the straw on the ground. Then, as for his stackyard, it will not bear inspection, exhibiting in it the same sample of slovenliness and waste. The seed time approaches, the land is unprepared, the weather may set in wet, and in consequence the seed is improperly put in. It cannot be a matter of surprise that by such management the produce of the land should not be sufficient to pay the rent and cover all expenses; for, in a few years, his capital is gone, and he is obliged to leave his farm, where, with proper industry and skill, he might have remained.

3. *Parsimonious Farming.*—This does not consist entirely in that slovenly and careless style I have been describing, but rather in a kind of niggardly and covetous disposition, such as when a man, as the old proverb says, "Stoops at a straw and throws away a fold." Although a character of this description may be perfectly acquainted with his business, yet his narrow and selfish disposition, working upon his fears, will not allow him to expend one farthing beyond what he supposes is barely sufficient for the operations of the farm, because he thinks, if he should, he would never see it again. His establishment is in full keeping with his principle, being scantily provided with both men and horses to work the farm; and he never employs an extra hand without absolute necessity. The general routine of the farm is also carried on in a similar manner to the bad farmer, only he is decidedly more careful. His Autumn work is attended to; turnips partially secured; his cattle, when brought to market, are not fat, because they have been too sparingly fed; during the Winter he collects what manure he can upon the farm, but never thinks of purchasing any; when the Spring arrives, his land is in readiness to receive the seed at the proper time, and the same may be said of his green crops; but in consequence of the limited quantity of manure, the produce proves scanty; his hay crop is deficient from the same cause, and often injured by being too long exposed to the weather; his corn is allowed to stand uncut after it is ripe, as he calculates upon having the reapers at a lower rate, by waiting until others are done—in the mean time either a wind comes and shakes out a great portion of the grain, or the weather sets in wet, and much of it is spoiled; and when at length it is brought into the yard, he neglects to secure it, lest he should be at too great an expense; and, lastly, when thrashing his corn, he is astonished at the smallness of its yield, forgetting that the land had not been properly cultivated; thus, at the end of the year the parsimonious farmer finds himself in no better circumstances than when he commenced, merely getting a living, but nothing to spare, for all his time and labour. In thus briefly touching upon the last division of this paper, I regret to add that I am acquainted with several respectable farmers who are so thoroughly in love with the old system of management (a system which I am glad to say is daily tottering on its base), that not all the arguments you can bring forward, together with the various improvements and successful results in modern agriculture, will induce them to alter their habits, or adopt methods that would not only promote the true interests of both themselves and landlords, but would teach them the well-known adage, that 'to reap plentifully, they must sow plentifully.' So long, however, as they cleave to their antiquated notions of farming, I give up all hope of seeing them out of the list of parsimonious farmers, and must look forward to the rising generation to obliterate the name from amongst us.

I have thus briefly described the three different modes of farming, and I have no doubt you will concur with me that the first is decidedly the best; but to prove the matter more fully, I have drawn up two tables showing different results between good and bad farming, leaving the parsimonious farmer in the condition I found him. I have fixed upon a farm containing 300 acres, allowing 60 acres to be old grass land, and 240 acres arable, and have made my calculations from the farm being managed in the fourth and fifth courses of husbandry; a system that, if properly carried out in this district, would, in my opinion, be attended with the best success to both landlord and tenant.

GOOD FARMING.

Expenses.

	£.	s.	d.
Rent and tithe	480	0	0
Poor rate, 1s. per pound	24	0	0
Highway rate, 6d. per pound	12	0	0
Keep of four pair of horses, including men's wages, blacksmith, joiner, &c., at £100 each pair	400	0	0
One saddle horse	25	0	0
Shearing and mowing	70	0	0
Grass and turnip seeds	15	0	0
Women's work	50	0	0
Two spadesmen	70	0	0
Manure	54	0	0
Incidental expenses	25	0	0
Seed corn	79	2	0
Interest on £2,000 capital, at £6 per cent.	120	0	0
	1424	2	0

Acres.	*Income.*			
40	Wheat, 14 bolls per acre, at 13s. per boll	£364	0	0
14	Barley, 20 ditto, at 8s.	112	0	0
54	Oats, 21 ditto, at 5s. 6d.	311	17	0
24	Beans and Peas, 12 ditto, at 9s.	129	12	0
30	Seeds, at £4 per annum	120	0	0
24	Two-years' grass, at £3 5s. ditto	78	0	0
20	Turnips, at £7 ditto	140	0	0
5	Potatoes, at £14 ditto	70	0	0
30	New land fog, at £1 ditto	30	0	0
60	Old land pasture, at £3 10s. ditto	210	0	0
	Pigs and poultry	40	0	0
		1605	9	0
	Expenses	1424	2	0
	One years' profit	£181	7	0

BAD FARMING.

	Expenses.			
	Rent and tithe	£480	0	0
	Poor rate, at 1s. per pound	24	0	0
	Highway rates, at 6d. per pound	12	0	0
	Keep of four pair of horses, including men's wages, blacksmith, joiner, &c., at £90 each pair	360	0	0
	One riding horse	25	0	0
	Shearing and mowing	70	0	0
	Grass and turnip seeds	15	0	0
	Women's work	35	0	0
	One spadesman, 6 months	17	10	0
	Manure	15	0	0
	Incidental expenses	20	0	0
	Seed corn	79	2	0
	Interest on £1,500 capital, at £6 pr. ct.	90	0	0
		£1242	12	0
Acres.	*Income.*			
40	Wheat, 11 bolls per acre at 12s. 6d. per boll	£275	0	0
14	Barley, 16 ditto, at 8s.	89	12	0
54	Oats, 16 ditto, at 5s. 3d.	226	16	0
24	Beans and peas, 9 ditto, at 9s.	97	4	0
30	Seeds, at £3 5s. per acre	97	10	0
24	Two-years' grass, at £2 7s. per acre	56	8	0
15	Turnips, at £5 ditto	75	0	0
5	Potatoes, at £10 ditto	50	0	0
60	Old land grass, at £3 per acre	180	0	0
30	New land fog, at 12s. ditto	18	0	0
	Pigs &c.,	30	0	0
		1195	10	0
	One years' loss	47	2	0
	One year's profit, good farmer	181	7	0
	Difference between good and bad farming, for one year, upon 300 acres of land	£228	9	0

I have thus shown you a profit of £181 7s. annually towards the good farmer, and a total loss of £47 annually towards the bad one. Thus, we would perceive that in the course of 21 years the good farmer, allowing him to have his living out of his farm, will be in possession of at least £5,000, including his capital, while the bad farmer will be reduced to poverty. One great drawback, however, to good farming, is the want of sufficient capital. I would, therefore, advise no man to embark upon a farm larger than his circumstances will warrant. He ought always to remember that a small farm, well managed, will remunerate him better than a large farm, neglected. The manufacturer and tradesman have great advantages over the agriculturist, having a much quicker and larger return upon their capital; but I see no reason why the farmer should not be equally recompensed, for he has a more laborious life. When I first commenced my career as a farmer 24 years ago, upon a 21 years' lease, I made up my mind to farm well, in every sense of the word, sparing neither expense nor labour. My farms were completely exhausted by the previous tenants taking every advantage, which, however, proved nothing to their interest. It therefore required upwards of eight years to bring the land into what might be termed a proper state of cultivation to compensate me for the capital expended. I have annually bought 20s. worth of manure for every acre of fallow, independent of what was made upon the farm. This clearly shows the advantage of land being let on leases; for, with few exceptions, no man will be willing to expend his money and labour upon an uncertainty; for when he receives encouragement it stimulates him to improvement. Should, however, farms as I have described be offered to the public, they may probably bring a higher rent for a few years; but the landlords, in such cases, ought to be cautious in choosing his tenants, for indifferent farmers generally offer the most rent, and such farms falling into the hands of tenants of this description would soon be reduced to their former state, and require the same time and expense to bring them round, besides being let at a considerably lower rate. I am aware that several farmers are so circumstanced, from various causes, that they cannot make the improvements they otherwise would, were they differently situated. For instance, their landlords may be unwilling to build them suitable offices, and thus they are prevented from consuming their straw and turnips upon the farm, and obliged to send them a distance of several miles to market. When I look round this district I am astonished to find several respectable farmers who have not sufficient accommodation for half the quantity of cattle they ought to keep. Again, their farms may

be composed of soil that, in its present state, will not repay them for expensive cultivation, and as such, if land must necessarily be occupied, it ought to be improved; and if thoroughly drained and properly cultivated, it might be made to produce nearly a third more corn. This cannot be done alone by the tenant, but he must necessarily be assisted liberally by the landlords. It is my firm opinion that the time is not far distant when land of this description, if still neglected, will not find a tenant; and when the proprietor becomes the occupier, I need not say what will be the amount of his rent-roll.

In thus concluding my imperfect remarks upon this important subject, from observations founded on my own personal experience, and knowing, as I do, that the profession of an agriculturist is precarious and full of risk, I would simply say to all, both good, bad, and parsimonious farmers, that my principle object in bringing this subject before the club, is to endeavour to instil a more active and liberal spirit of industry and enterprize amongst us, in order that we may keep pace with the ever onward march of improvement progressing in every branch of the national economy, so that at least agriculture may maintain the position to which its great importance entitles it.

The CHAIRMAN complimented Mr. Stephenson upon his paper, and concurred with him as to the importance of long leases. On the subject of capital, he remarked that the late Lord Leicester (Mr. Coke, of Holkham,) considered £10 an acre to be the amount which a tenant should possess, to stock and cultivate his farm properly. In this neighbourhood £6 or £7, he believed, was thought to be about the mark.

Mr. JOHN BROWN thought that £6 was not sufficient. From his experience as a farmer and land agent, he knew that he could not farm properly; nor could any man farm with advantage, who only had £6 per acre.

Mr. STEPHENSON believed that the bulk of the farmers in this district had not more, upon an average, than £4 per acre.

Mr. BROWN, and this is the reason we have so many bad farmers.

Mr. N. BURNETT put in a good word for the small, poor struggling farmer, whose inferior soil, whose necessities, and not their will, were often the cause of the bad condition of their land; they know how to farm, but had not the means.

Mr. LAYCOCK passed a high eulogium upon Mr. Stephenson's admirable and practical paper, and said that his (Mr. S's) exertions were an example of what might be done by good management upon an exhausted farm.

On the motion of Mr. BURNETT, seconded by Mr. JOHN COOKSON, a vote of thanks was passed to Mr. Stephenson.

Mr. STEPHENSON, in acknowedging the compliment, said that it would always give him pleasure to assist in promoting the object of the society. He trusted that each member would cheerfully come forward, and keep up the discussions, for all can add their mite to the general fund of information.

The meeting (which was numerously attended) then separated.

MR. JONAS WEBB'S BABRAHAM TUP SHOW.

The twenty-second annual letting of pure Southdown tups, the property of Mr. Jonas Webb, of Babraham, Cambs., took place, on Friday, the 7th ult., in a field adjoining the residence of the above-named gentleman. In the course of the morning there were apprehensions that the day would have proved a wet one; the rain at Babraham was but little, although in the neighbourhood heavy showers, accompanied by a tempest, were experienced. About two o'clock the business commenced with considerable spirit. Mr. Martin Nockolds officiated as auctioneer.

The very best test, of the value of this flock may be found in the yearly increasing average prices attained for the rams submitted to competition. The highest priced tup was let for the season to Mr. Ayling, from Sussex, for 79 guineas. The entire number publicly let before dinner was 67; the gross amount realized was £1,571 17s., being an average of £23 10s. per head! Particular attention should be paid to the average price of a large number, inasmuch as isolated instances of even higher prices than the maximum on Friday could be no evidence to rely on either as to the value or estimation of any particular breeders' stock. The most remarkable feature at the present show was the manifest improvement in the shearling tups. We particularly noticed three distinguished for their beauty of symmetry, quality of wool, and every qualification for a first-class animal. They let for the season at an average of 60 guineas each. Many others were hired at prices varying from 30 to 45 guineas.

It were vain to attempt to give anything like a list of the company present; amongst those present at the show or dinner we observed Lord Hardwicke, the Duke of Manchester, the agents of his grace the Duke of Beaufort, Lord Braybroke, Lord Walsingham, the Earl of Chichester, the Duke of Grafton, Lord Ducie, Lord Milton, Earl of Leicester, Earl of Burlington, Mr. Coleman, the celebrated American agriculturist and author, and about 200 agriculturists and breeders from every part of the kingdom, from bleak Northumberland to the sunny downs of Sussex.—Abridged from the Mark Lane Express.

SCOTCH FARM ON THE DUKE OF SOMERSET'S TOTNES PROPERTY.

T. Mitchelmore, jun., Esq., having been appointed Secretary of the South Devon Agricultural Association, we have much pleasure in referring to an effort which he is making to introduce the Scotch system of agriculture into Devon.

In the fall of 1843, Mr. Michelmore, jun., took the Holwell Estate of his Grace the Duke of Somerset, in order to lay it out as a Scotch farm, to be cultivated rigidly on the system followed in the highly-farmed district of East Lothian. Mr. Michelmore had previously studied the Scotch system of farming, by a residence of three years on the northern side of the Tweed; and as the system has something of the air of novelty in this district, we have great pleasure in giving a note of a couple of visits which we have made to Holwell within the last three weeks.

Holwell Farm is situate on the hill between Totnes and Berry Pomeroy Castle. It lies right and left of the road to the old Castle, the farm buildings being opposite the Truestreet turnpike toll-house. The situation is exposed, and the soil a very heavy clay—Nature having done but little for the agriculturist. Previous to Mr. Michelmore's taking it, the estate was comparatively unproductive; it was so wet that it was the terror of hunters, who avoided its bottoms, with the caution engendered by bitter experience, for it was as difficult to get through them as through a Chancery suit. Mr. Michelmore selected the worst place he well could, under the impression that an experiment on the Scotch system would tell better here; for here success would be most marked, whilst failure could not make things much worse than they had been. The risk was great, but the example of success would be greater, because, had he selected a more fertile and promising place, the degree of success could not have been so decidedly marked, nor the merit of it so effective.

The first operation was thorough draining; next, the removal of all hedges in the tillage land, and substituting the Scotch thorn fence in the place of the broad bottomed Devonshire hedges, which are sacred to the memory of all love wanderers, and most protective of all hedge vermin. Whilst this work of preparation was going on, there was a liberal importation of improved agricultural implements. To settle the clods of the soil, there was, of course, a tremendous Crosskill; it would have done the heart of an Autocrat good to see how this overbearing fellow levelled the clods, crushed them into seed-receiving fitness, and pulverized the soil. Next came a turnip hoe, a very useful implement, and of native make; for subsoiling, ridging, hoeing wheat or turnips, it is an excellent implement. But the great gun in this department is the two-ridged turnip drill, manufactured by Mr. Slight, of Edinbro'. This is a very useful and economical implement; it sows two ridges with manure and seed, at any required width, the breadth between the ridges being the guide; it adapts itself by shifting gear to any variation, and deposits the seed on the crown of the ridge. In the yard, there is a large horse-power chaff cutter, made by Messrs. Kingdon, of Exeter, and steaming apparatus of a new description, to prepare roots for horses.

The four-course is the system pursued, turnips of course being the basis. First, there is a crop of turnips; next, barley and grass seeds. The seeds are mown for hay, and the land is then ploughed down for oats or wheat, which crop completes the four courses.

The farm consists of 106 acres; but, from the work necessary to be done, it is not yet entirely got into the system. The draining, though generally completed, has not been entirely finished, as wherever a wet spot appears, there the remedy is applied. Two water-meadows have been made by bringing the drains to one centre, and a valuable piece of meadow has been formed in the bottom by levelling, &c.—a praiseworthy and successful effort, which has drawn the attention of the neighbourhood, and was noticed with commendation at the late agricultural dinner at Totnes.

The experiment has been thus far progressive; the farm has not yet been brought to the state of perfection which the system will probably develope, but at present the crops are the admiration of the neighbourhood. First we will notice the wheat, which is a magnificent specimen of drill culture, remarkable here for its novelty—the drills being one foot apart, which distance allowed the wheat to be deeply horse-hoed. We saw it three weeks ago, and could not have anticipated the vast improvement which it has since made. At that time the width of the drills looked like a remarkable misappropriation of the land. Now the field is so entirely filled, that it requires a second scrutiny to discover the drills. It was a ley piece, sown the first week in November, manured with 2 cwt. of guano and 2 cwt. of superphosphate of lime per acre. The final test is deferred till harvest; but as far as present promises go, it is the finest piece of wheat we have yet seen. The barley, which three weeks ago was just showing itself, is now as promising, both for quality and quantity, as the eye could well desire. The crop of barley last year was between fifty and fifty-five bushels per acre, and this crop bids fair considerably to exceed it. The oats are in every respect worthy of the barley. Last year the crop was 70 bushels per acre, and it is not expected to fall short this year. All the corn crops have received two cwt. of guano per acre, Mr. Tuckett, of Exeter, having supplied it. There remain to be noticed the crops of mangel wurzel, carrots, and cabbages, which are sufficiently promising. The swedes are now in course of sowing, and we hope to hear a good account of them in the fall—about twelve acres will be devoted to turnips.

There is a field of clover which has been mown for

green food, the after clover of which is looking remarkably luxuriant. This field was manured with three different manures—guano, nitrate of soda, and superphosphate of lime. In addition to this clover there were eleven acres of clover hay down, and a very good share; and finally, the neatly trim appearance of the hedges not only looked exceedingly tidy, but showed a considerable saving of land.

The dairy forms a prominent feature on the estate, and is not the least successful portion. The cows are kept in by day on cut clover, and let out by night in the grass land. Eleven bullocks are now fattening, several will be fit for the July market—there were eight fattened for the May fair, which excited very general observation; one of them, a Jersey, carried 196 lbs. of rough fat. Oil cake is extensively used, and the results are seen in a magnificent heap of manure which graces the yard.

The yard is very complete, with a large manure house and tank. In the manure house we saw them mixing sulphuric acid and bone dust, forming superphosphate of lime, to drill in with turnip seed.

Time has not yet been afforded to develop fully the system and perfect the arrangements; but enough has been shown to prove that the Scotch system may be successfully applied in Devon to the increase of produce, the promotion of labour, and the better return for the capital and skill of the farmer. We omitted to state that the turnips have had twenty tons of dung per acre. —Western Times.

AGRICULTURAL SCHOOLS FOR IRELAND.

SUGGESTIONS FOR THE ESTABLISHMENT AND GOVERNMENT OF AGRICULTURAL SCHOOLS.

"In the present alarming and calamitous state of Ireland, and with the many causes of anxiety for the future, which are crowding around us, the prosperity and extention of our national schools are, to me, the most hopeful incidents in the condition of the country. The new and educated generation will, I feel confident, be immeasurably superior in morals, in regard for social duties, and their intellectual acquirements, to those who have preceded them. The difference, both in manners and appearance, between the young, in villages where good national schools have been supported, and the inhabitants of less favoured districts, must strike even the least attentive observers. It is with a full conviction of these results, and with a most grateful feeling of respect for the distinguished and excellent men to whom the public owe so much for their conduct as commissioners of education, that I venture to call attention to one branch of the great system which they direct and control, and which seems to me capable of a wider extention, and of more practical usefulness.

"I allude to the system of agricultural instruction. It is wholly unnecessary to dwell on the importance of this branch; but I may be allowed to observe, in passing, that what, before the blight of the potato crop, was a matter of undeniable usefulness, is now, by this casualty, made a matter of indispensable necessity. We are called upon in some districts, *under the penalty of famine*, to teach our people modes of cultivating better crops, and even in the less afflicted districts, if property is to be continued as such, by yielding any surplus produce. This requires more skill and knowledge than the Irish peasant as yet possesses.

"The obvious advantage of agricultural knowledge has been so often and so very recently admitted by the commisioners (see 11th Report, sec. 8, p. 8), that further observations from me are unnecessary.

"Although it is uncalled for to argue on the usefulness of agricultural education, it is not unfitting to consider the best mode of promoting it, and removing the obstacles which at present retard its progress. This subject has been forced on my attention, not only by my knowledge of the present condition and wants of Ireland, but by my inspection of the school at Larne, conducted under the guidance of Dr. Kirkpatrick, by a most able teacher, Mr. Donaghy. The first head of observation has shown me what is required; the second what may be effected, and by what means.

"Sec. 1. I am sorry to observe, that a deficiency of the annual vote has hitherto retarded the establishment of the proposed thirty-two model district schools (13th Report, p. 14). But it appears that sites are already selected, and establishments are in progress in six districts. I do not find, in the circular of June, 1846, that the subject of agricultural instruction is proposed to be connected with these model schools; yet it is obvious that an example may here best be set, and practical instruction given. These schools will be more directly under the control and management of the commissioners than such as are built and supported by ordinary patrons. The teachers will be of a higher class, and it will be much easier to erect houses for boarders (the rich farmers' sons), whose annual payments will go far to reduce the expenses of the establishment. I should, therefore, most earnestly submit for consideration the propriety of engrafting, on each of these intended model schools, an

agricultural system of teaching. If the country gentlemen and landed proprietors were invited to contribute towards an object of such importance to themselves, and were permitted to nominate scholars in proportion to their contributions, I feel little doubt that private funds would be forthcoming in aid of the public vote. The farmers would also, in many cases, pay gladly for the education of their sons, as has been proved to some degree by the class of pupils educated at Templemoyle.

"Sec. 2 The legislature has most wisely encouraged a connection between the workhouse schools and the national system, and it appears (13 Report, p. 7), that 99 unions out of 130 are already placed under the board.* About one-half of the inmates in the workhouses consist of children. This fact is deserving of the greatest consideration. The number of children is a rapidly increasing number, and, if unchecked, they will, year by year, occupy a larger space of workhouse accommodation, and thus gradually lessen, and ultimately engross that which has been relied on as the only safe test of destitution. Nor is this all. Not only will the workhouse test be thus lost, but the children so brought up from infancy in the workhouse will be rendered incompetent to the struggles, the trials, and rough industry of the world at large. For what pursuit will a being be fitted, who has been brought up for sixteen or eighteen years in a workhouse? Looking back to the experience derived from the endowed boarding-schools, the foundling hospitals, and establishments of that nature, we must conclude that children reared in the artificial system of a public establishment will, whether male or female, be unable to stand vicissitudes, or to withstand the temptations of ordinary life. It has sometimes been suggested that these children would furnish subjects for emigration; but brought up as paupers in the ordinary workhouses, how will they meet the hardships of the back woods of Canada, or the labours of the bush in Australia? They will be as unfitted for the colonies as for home, and vice and misery seem to await them. It may have been from a conviction of the deficiencies of the present system of workhouse education, that the sect. 24 of the 10th Vict., c. 31, was passed. By this act, sec. 21, provision is made for the union, for educational purposes, of the North and South Dublin Workhouses, and a power is given to purchase 25 statute acres of land, and to erect thereon schools for the pauper children of both unions. This principle is extended, by sec. 24, to all Ireland, though the enactments are not very complete. The effect of this statute and its object seems to be, to provide industrial training for pauper children; and the extent of land permitted to be acquired marks the proposed application of this instruction to agriculture. I cannot but hope that this intention will be realised, and this without delay. Supposing every three unions to be consolidated for education, and each district to be provided with an agricultural school, we might hope to see from forty to fifty great establishments of this kind created and scattered over the face of Ireland, and an industrial education offered at once to 50,000 or 60,000 children. These schools would naturally fall under the management of the Board of Education. These children would no longer be the miserable, inexperienced, useless beings which workhouse education can hardly fail to form, but would constitute a class eagerly sought for as farm servants, agricultural stewards, or for similar offices. If they went to the colonies, they would be equally useful there, and would give a new spring of industry to our most distant possessions.

"Sec. 3. Great and manifest as are the advantages attendant on the two steps I have described, I admit that they are still insufficient. On the principles already laid down by the commissioners, it may be assumed that the state should, as far as possible, encourage agricultural instruction, and the annexation of agricultural schools and gardens to the national schools. Many causes, some of them capable of removal, have hitherto impeded this important object. I think the annual reports of the commisioners, if more distinct, full, and explanatory on the subject of agricultural schools, might be made more useful. The schools already in operation should be accurately described; plans of the farm, houses, and buildings, should be given; specifications and estimates should be provided, and the accounts of progress stated from year to year. I doubt whether this can ever be effectually done without a special report on the agricultural schools, made by an inspector really conversant with the principles on which they should be conducted. No one estimates more highly than I do the valuable labours of the inspectors already appointed—I value, because I know them. But the most able inspector for literary purposes may be, and in most cases is, entirely incompetent to examine or to report on agricultural teaching. More detailed reports, exclusively applicable to agricultural schools, and a special inspection of those schools, I consider indispensable, if we wish the system to take root and to extend.

"Another great impediment to the progress of agricultural teaching will be found in the exaggerated estimate formed of the outlay required for such an establishment. This has been proved to

* The legislation of the last session has given a new importance to this branch of poor-law administration.

be a mistake, by the experiment so successfully tried at Larne. Four acres of land, buildings of the greatest simplicity and cheapness, farm-houses, out-offices for feeding cows, rearing calves and pigs, a small dairy, are all that are required in addition to the national schools erected on the usual plan for males, females, and infants. The whole scheme seems to have been worked out; apprentice pupils, agricultural scholars, instructed well in literature; literary pupils, practically informed in agriculture; neither branch of study sacrificed to the other, but each giving strength and effect to the course of instruction with which it is combined; the tendency of the whole being towards a self-supporting principle, and even at present depending on an annual local contribution under £50; this is shown at Larne, in a model easy of imitation, and, therefore, deserving the greater praise. I should also remark, that this is done on land, subject to a rent of £5 an acre; that I saw there three cows in house, two calves in process of rearing; that there was saved a pre-eminently good crop of wheat, fair oat and root crops; the whole raised without the purchase of one pound of manure, and a profit of £13 carried to the master's account. Now, I cannot but think that the circulation of facts like these, with a clear statement of the farm accounts, a report on the mode of cultivation, on the rotation of crops adopted, and the results of all experiments tried, would do more to diffuse the spirit that is wanting, than many who are still sceptical on the subject are inclined to believe.

"Another deficiency should also be supplied. It is impossible to refer to the school-books published by the commissioners without the most grateful admiration. In Great Britain, and in our distant colonies, their value is now recognised; and I feel confident that any passion, prejudice, or misrepresentation, which hitherto has limited their sphere of usefulness, must speedily disappear. If, however, we wish to increase our agricultural operations, we must add to the present list of books an agricultural series. We must have a first, second, and third book, prepared for our agriculturists; we must have a small cottagers' "Book of the Farm." We must have a simple Agricultural Catechism; we must teach and facilitate the simple experiments which will enable the schoolboy to test soils and manures. I have known beds of calcareous marl left wholly useless and disregarded, as if they were sterile clay, from want of knowledge to try an experiment which a few drops of acid would have brought within every schoolboy's reach; and possibly, by turning mental and physical activity into new channels, would have saved many a window from fracture. Mr. Skilling's book does good; but we want an introduction to it. I have known Professor Johnston's Catechism advantageously introduced; but that, too, should be reserved for the more forward classes. To these the principles of land-surveying, draining, the use of the theodolite and spirit-level, the principles of road-making, mechanics, as exemplified in ploughs and farming implements, would present innumerable branches of practical knowledge, all tending to ensure the future support of the pupil, and the general improvement of the country.

"This hasty and very imperfect sketch will, when reconsidered, be found to embrace several topics capable of much larger and more useful development, if treated by abler hands than mine. It includes:—

"1.—The establishment of agricultural instruction in the thirty-two proposed district model schools.

"2.—The establishment of agricultural instruction in the proposed combined schools for pauper children in union workhouses, as contemplated by the 10th Vict., c. 31, sec. 24.

"3.—The extention of small agricultural schools, in connexion with ordinary national schools, on the scale of that at Larne.

"4.—An annual special report from the commissioners on the agricultural schools now established or in progress, accompanied by plans, estimates, specifications, and annual balanced accounts of income and expenditure.

"5.—A separate inspection of these schools by an officer conversant with agriculture, and competent to report on the subject.

"6.—An addition to the library of the commissioners, by the publication of a farmers' series, rising from the simplest primer of husbandry to the more scientific teaching.

"I have intentionally abstained from any observations on the school at Glasnevin: that should be the mainspring, *fons et origo*, of the whole work. But that school lies so immediately under the observation of the commisioners, that they are the best judges how far, in its present state, it is capable of being made the centre of the system I have projected.

"Let not my proposition be rejected on the ground of expense. In the first place, I doubt whether that expense would be as great as many apprehend. But even if it were, we should compare the expense with the gain—we should consider the formidable difficulties of the position in which Ireland is placed; the duty and the necessity of improving our husbandry, if we wish to feed on cereal produce a people bred on potatoes; the fatal consequences to property, if a surplus produce is not raised out of land; the possible absorption of the whole rental in rates, if vigorous efforts are not now

made; the difficulty of acting on the old and ignorant; the comparative facility of acting on the minds of the young. These subjects present topics for reflection, which renders mere cost a secondary consideration. Had such a system as that now recommended been carried into effect wisely, but liberally, twenty years ago, how many lives, how many millions of money might have been saved in the last two years of sorrow! God grant that we, our rulers, and legislature, may feel these convictions, and prepare to act upon them with vigour, and without hesitation or delay.

"MONTEAGLE.

"*Mount-Trenchard, 25th Sept.*, 1847.

THE BRITISH LONG-WOOL TRADE.

We conceive it to be one of the leading duties of the journalist to furnish from time to time, as opportunities present themselves, all the information in his power upon every subject which may interest or benefit any large section of the public; and without presuming that we are more attached to the gathering of statistical information than others of our contemporaries, we must say that we deem such information to be of the first importance, and particularly in a department where perhaps it has been less attended to than in any other, viz., the annual growth and sale of long wool in the United Kingdom.

As our trade article of last week would show our readers, our attention has been called to the subject of fleece-wool from the unusual and unprecedented low prices at which it has been lately quoted, in comparison with the average of former years; either indicating the belief of the holders in a large permanent surplus beyond consumption, or exhibiting the effect of the same want of confidence and of capital which has so long operated in reducing prices in almost every department of produce and manufactures. And it is because we think long wool is not in excess beyond the usual average, except from causes of a temporary character, and because we think it is a raw material which, next to *land*, is the most eligible and safest possible investment, that we now more prominently draw attention to the subject. In our paper of June 17, 1837—which was a year of panic and depression such as we seem periodically to be visited with every ten years, as appears by the panics of 1816, 1826, 1837, and 1847-8—in our paper of the date referred to, when everything was depreciating, and it was thought certain long wool would decline and be equally unsafe with manufactured articles, we drew attention to the distinction existing between a raw material, which is supplied by nature but once a year, and the products of the jenny and the loom; and we showed the immense advantage, as an investment, in favour of long wool over manufactures, from its small annual amount, and the immense number of persons of capital who were interested in and capable of holding it. And we had the satisfaction of seeing—notwithstanding the unusual gloom which prevailed, and the decline in prices of almost every other article—that our opinions were justified by the experience of the year following—during which long wools not only maintained the prices of 1837, but advanced upon those prices considerably.

Our reasoning at that period, under nearly similar circumstances, is so applicable at the present moment, that we cannot refrain from quoting it for the benefit of those growers of long wool whom we have the pleasure of numbering among our readers:—

"Long wool may possibly give way, if the farmers have taken leave of their senses, or if they are bankrupt in pocket; but not otherwise. There has been little or no manufacturing in wool, or in anything else latterly, and few or no sales of that or any other material. But there is little doubt, from the experience of the last few years, of the consumption upon an average keeping pace with the production. Sales have been attempted by woolstaplers, and have not been made at the intended prices; have been again attempted, and again and again, when mills were still and money scarce, and orders absent and failures frequent, and distrust general; and from such premises the conclusion is drawn by fear, and not reason, that wool must go down! The wonder is, not that sales should be impossible, but that wealthy men who have marked the long wool business for the last few years should have attempted them at such times. The natural consequence has been, that a want of confidence has been engendered; and we all know that when confidence is once weakened, it is difficult to restore it. Long wool, however, has peculiar advantages. A raw material, the distinguishing product of our native isle, it cannot for years to come (even from the antipodes) be increased by import to any extent. It is seldom, if ever, that a year's stock is held a-head of the demand; and the greater part, while it remains with the growers, is held by men who think little or nothing about the interest of money, provided there is any probability of an improval in price, however remote and distant. A wealthy farmer must hold his property in something; and he reasons rightly, that long wool is the one of his products which affords the most eligible and secure investment.

"Farmers! you are about to clip, and some of you, as usual, to sell your wool as soon as it is clipped; and unless you bestow this year a little more thought upon the subject than you are in the habit of doing, you will make sales at ruinous prices. *This you need not do.* Acquaint yourselves with the quantity on hand in the manufacturing districts. You will find then that the idea of a stock of long wool being in the hands of staplers is a fallacy, and that little except skin wool is held by the spinners. You will find that the needy holders have been sending all the skin wool to market, and that they have forced it in at whatever price they could get. But you will find also that the supply has now ceased—that they have now no more to send. You will find that the wool-dealers think, because they have bought jobs in skin wool, that long wool must follow; and they will not get it out of their heads till you undeceive them.

"If you think, upon reflection, that prices may be maintained, and that the chances are in favour of holding, *hold*, and keep all the wool you can out of the market—out of the dealers' hands. Now, out of the farmers who clip, we will say, to be safe, there are one-third who cannot hold; but this third, mind, *do not clip one-third* of the wool. They are mostly very small holders, and though one-third in number, they will not clip, according to the best information, one-sixth in amount. But, to be perfectly safe in our calculation, say they do clip one-sixth, and say they *must* sell, what then? Why, it follows that this sixth part of the clip will, for some months, regulate the price of the whole, and that (in the present stagnation of business) upon this sixth part rests the question *whether the British long-wool clip of* 1837 *shall be sold for* TWO *or for* THREE *millions*, as it was last year. Things cannot be worse—they may be better; and the best way to insure their being so, is for every man to give to the public as many *facts* as he can command, that folks, instead of being visionary may be practical. It matters not now what causes have led to this state of things. The evils of the monetary system may be descanted on hereafter; the causes of the late panic are matters of history. We are in the midst of the effects; and what is necessary is, to see what rational grounds there are for confidence in an improved state of things. But, instead of reflecting and judging from acknowledged facts, what has been the course pursued? Men of business, although they would not buy themselves, have thought that they could induce purchases by others, when no orders were in the market, and when rumours of failures and embarrassments were floating upon every wind.

"While distress, in its last agony, has appealed for aid to the Bank of England; in the midst of a general commercial wreck, when every house has been looking to existence and not to profit, they have expected the usual business of the country to be transacted, and in every newspaper of the kingdom have been putting forth weekly gloomy paragraphs upon the state of trade, when no trade was likely to be done, which have only tended to increase dismay. Folly! expect active business with a state of insecurity—expect light in an eclipse!"

The similarity of the position of trade in June, 1837, and in June, 1848, will strike forcibly every one who compares the two periods. The same causes have produced the same effects, the only difference being, that in 1837 the embarrassment was caused by the excessive over-speculation of the American houses, while in 1848 it has been caused by over-speculation in railways, the failure of the supplies of food, and the derangement (by their internal disorganization) of our relations with continental nations. But notwithstanding the heavy depression of everything else in 1837, long wool did not give way as was anticipated. It maintained its then high value, both in that and the following year. We subjoin a return which we have received from one of the principal fleece-buyers of Bradford, showing the prices of long wools for the last ten years:—

July	1838	the price was	38s. to 40s. per tod.
„	1839	„	32s. to 36s. „
„	1840	„	28s. to 30s. „
„	1841	„	24s. to 28s. „
„	1842	„	23s. to 26s. „
„	1843	„	22s. to 24s. „
„	1844	„	28s to 30s. „
„	1845	„	30s. to 33s. „
„	1846	„	27s. to 29s. „
„	1847	„	23s. to 27s. „

—showing an average for the ten years, of 28s. 10½d. per tod.

The following are the average prices for Leicestershire and Warwickshire long wools, of farmers' lots of combing wools at shear-day, also furnished to us by one of the largest staplers in this neighbourhood.

June	1838	..	38s. 0d. per tod of 28lbs.
„	1839	..	36s. 0d. „
„	1840	..	29s. 0d. „
„	1841	..	27s. 0d. „
„	1842	..	25s. 0d. „
„	1843	..	23s. 0d. „
„	1844	..	30s. 0d. „
„	1845	..	30s. 0d. „
„	1846	..	27s. 6d. „
„	1847	..	25s. 6d. „

—showing an average for the ten years of 29s. 2½d. per tod.

What do these statements show? They show that the average prices for the ten years since the last panic, in 1837, have been 28s. 10½d. a tod, in the one case, and 29s. 2½d. in the other, a trifle above 1s. a pound. Why, then, in the name of common sense, should dealers, spinners, and manufacturers be alarming each other, and be doubting about making purchases at the rate of a sovereign a tod, as they are now doing? Is it likely that any sound-judging grazier who can hold his wool will force it upon the market at 20s. a tod now, *the lowest price it has been sold at since the year* 1800? Is it probable that any, except those who are *forced* to sell, will sell at the worst possible period they can fix upon? What reason, then, is there to conclude that the average of the next ten years shall not be equal to the average of the last ten? Panics are landmarks, which teach salutary lessons, and from the history of the past, *ten years of steady business may be fairly looked forward to* before another year of over-excitement and speculation again deranges our home-market. Population goes on increasing, here and in other countries. That population must be clothed and fed—and, in proportion as it is *cheaply* fed, will be its power of consuming manufactures. The promise, both at home and abroad, of an abundant harvest, opens a prospect of an improved state of things throughout the world; and our advice to the graziers is, "Rest upon your oars," and let the market recover a healthy tone before you attempt to make sales. Your wool fairs are this year of no service to you, unless you show by them that you have nerve to hold till a cool judgment takes place of the despondency which now paralyzes the buyers throughout the country. You may admit that the French for the last three months have not been able to come into the market for wool, as in former years. You may admit that the Germans have not been able to order yarns for the last three months, as they have done heretofore—that the home trade has been dull—and that the continental nations generally have not been able to order manufactured goods. And all this cessation of demand, you may admit, is calculated to bring on low spirits and low prices in the holders of stocks of manufactures, and amongst factory employers. But this need not operate upon graziers, or affect the raw material, which, if it lie by one year

or two, will sustain no injury, and which, when revolutions are completed, and constitutions are formed, and order re-established, will be wanted and valued at its average worth. A cessation of demand from the continent must lead to the clearing out the old stocks they have on hand, and will develop a capability of eventually ordering more extensively in consequence of such a clearance. In a state of insecurity, their own population is not manufacturing, and they will have to be clothed by us. Whatever governments sway the destinies of the countries we have supplied, they must still be our customers; and if its value be not lowered by a suicidal policy on the part of the growers, long wool must inevitably ere long realize that fair and legitimate price which it ought to obtain to be remunerative to the producer, and to which he is so honestly and deservedly entitled.—Leicester Journal.

THETFORD WOOL FAIR.

SMALL POX IN SHEEP.

This fair was held on Thursday week, in the large room at the Bell Inn. There were only fifty persons present. Sir W. B. Folkes, Baronet, presided.

After the customary toasts had been drunk,

The CHAIRMAN gave the health of Mr. Hamond, a practical farmer (loud applause).

Mr. HAMOND, in returning thanks, said there was a subject to which he wished to call their most serious attention. It was one in which they were all deeply interested—the disease which had come into this country called the sheep pox, a disease which seemed most insidious, difficult to detect, and contagious to the highest possible extent. He thought an opinion ought to go forth from that meeting, and from every room where a party of farmers met together, as to the propriety of stopping, if they possibly could, the admission of tainted animals into the sheep markets. Glandered animals could be turned out of a market; there was a law to prevent the introduction of diseased meat into a market; and why should there not be a law to prevent sheep having a dangerous disease being introduced into the public markets. His neighbour, Mr. Muskett, of Narford, bought some sheep a few days since, and in four days he lost eight score. The day before yesterday he was passing there, and was informed he had flayed seventeen sheep that morning. It was a scourge enough to ruin a man, and he thought if the introduction of these diseased sheep into the market could be impeded, more good would be done than by forty thousand of the philanthropic schemes now-a-days set on foot. He would not detain them longer. He did not think he should sell his wool; he should say as he did last year, that he thought it would be a better speculation than wheat.

Mr. BIRCH thought they might very well request their Chairman to communicate with the Secretary of State on the subject, that some short law might be passed, or some means devised to prevent such stock being taken into the market. He begged to move, if allowed to do so, that their Chairman should communicate with the Secretary of State on the subject.

Mr. BARTLETT felt very timorous lest he should in purchasing shearlings get some of these sheep into his flock. Norwich market was one of the greatest in the kingdom for this description of stock, and he thought it was a question if the Norwich Corporation had not authority to prevent diseased stock coming into the market. If he were one of the Norwich authorities he should have no hesitation in preventing such sheep coming on the hill.

Mr. HAMOND said the question was put the other day, and an opinion was given that the authorities could not prevent their admission.

Mr. BARTLETT said if the farmers would say they would not buy sheep at Norwich market, they would have a remedy in their own hands.

Mr. HAMOND believed the question was asked by some of the Norwich officers whether this sort of stock could be driven off the hill, or prevented coming on. It was thought they could not, but these officers might have made a mistake. But as for a remedy by action, one could not get it, simply for this reason. The dealer might sell fifteen score to one man, and twenty score to another, and poison the flocks; but very few of the dealers in these animals could stand an action. There must be some immediate remedy, such as driving the animals away, cutting their throats, or putting a penalty on those who brought such stock into the market.

Mr. BARTLETT should advise that such sheep be prevented from coming on, for if the parties owning them brought actions he could not think they would lie.

Mr. BRYANT seconded Mr. Birch's proposition.

The CHAIRMAN would be exceedingly happy to lay the matter before Sir G. Grey, the Home Secretary of State, and would lose no time in carrying out the views of the meeting.

Mr. BARTLETT thought the matter might be included in the Health of Towns' Bill.

Mr. S. GAYFORD thought the meeting ought to be much obliged to Mr. Hamond for having introduced the subject of the sheep-pox. He happened to be on Norwich Hill, last Saturday, and saw the sheep there; but from the disapprobation expressed by every gentleman on that Hill, he thought the dealers would be very shy of bringing any more diseased animals there; but when an evil existed he was anxious to strike at the root of it. How did the parties who had shown these animals come into possession of them? He understood by purchasing foreign animals. Would it not be well, then, to have all sheep inspected before they came ashore?

It was stated that there was at every port an Inspector.

Mr. GAYFORD—How happens it, then, that any come in which are diseased? (A voice: Because the Inspectors know nothing about the matter.) He thought if if such were the case, it would be better to have proper persons, that the matter might be duly attended to. It was a great evil in all transactions of business not to have proper persons at the helm. He must express his opinion that some effectual means should be taken by Government to prevent diseased foreign cattle being distributed in England.

Mr. JOHNSON (Wicken) said that if gentlemen knew circumstances under which the disease had shewn itself in foreign sheep, and that they were publicly exposed in the market subject to the disease, if they would furnish Sir Wm. Folkes with that information they would assist him very much.

Mr. HAMOND believed the sheep pox was complained of abroad a long time before it reached England. There was reason to believe the Dutch sheep introduced the disease. No doubt the tariff which allowed the introduction of foreign sheep brought the epidemic and also the sheep pox.

Mr. BRYANT said a salesman at Smithfield market shewed him a diseased foreign sheep sent him to sell, a Merino. While talking about the sheep, a person came to the salesman and said, "How I am to settle this dispute, Duckworth, I know not. I have lost 100 sheep since I bought that lot of you." They were Merinos, and the gentleman said he had lost others.

[The appearance of the diseased sheep was thus described to the Reporter: they present a ghastly appearance, the faces and eyes being swollen, particularly from the eyes to the nose. The ears hang down. When the sheep are turned up, there are ulcerated sores under their arms and thighs, and when the wool is opened dark blue elevated blotches are seen, very similar to the sores from small-pox.]

The CHAIRMAN gave the health of Mr. Henry Overman, the breeder of the best sheep in Norfolk.

Mr. OVERMAN, in returning thanks, made an observation as to the diseased sheep shown at Norwich last week. He deemed it right to see the Editor of the *Mercury*, thinking he might be able to give some information as to the power of the Mayor to prevent such sheep being exhibited for sale. Mr. Bacon thought, if the farmers would combine and make some remonstrance, they would prevent it; but it could only be so prevented by parties combining and saying they would not buy there. That would make the dealers more cautious when they bought these animals. And he (Mr. Overman) should advise that the dealers should be made responsible, and that every sheep, like every horse, should have its warranty sent with it.

Mr. HAMOND, under the present peculiar circumstances, should advise farmers to buy their lambs of those farmers who wanted to sell lambs, and he would advise those who wanted to sell not to ask more money than they would ask of the dealing men. He knew that many men did not know what to ask till the dealing man had put a price on stock. He did not wish to depreciate the profits of the dealers, for he was much indebted to them; but he considered under the circumstances the plan he had proposed was advisable, and he thought that the less stock was removed from one place to another the better. He would repeat his caution, and say: "If I as a farmer want to buy, don't ask me more money than would Mr. A., B., or C., the jobber." He apologised for offering his advice, but he had their interests at heart. He was, too, a buyer and a seller; and he liked, if he bought things, that they should be sound; and he would never sell a thing that was unsound.

The meeting soon after broke up.

CALENDAR OF HORTICULTURE.—AUGUST.

I defer the retrospect to the close, as the character of the weather must then be more correctly ascertained, and with it the condition of vegetable produce.

OPERATIONS IN THE VEGETABLE GARDEN.

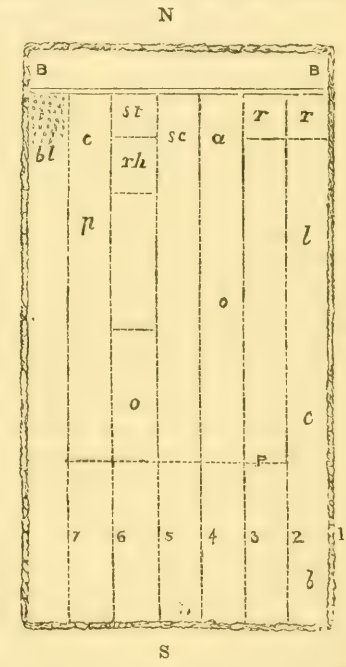
Winter Spinach.—The true broad-leaved Flanders variety should be early sown, and soon thinned out to three inches apart: *Endive* the same. These vegetables are among the first to be attended to; and then follows the sowing of the spring and summer *cabbages*, about the 6th day. The soil of the seed-bed need not be rich, but the plants should be thinned speedily to three-inch distances, and be kept clean; they are then to be removed to nursery rows on richer ground, to render them firm and stocky previous to a final removal in beds. Of all the varieties of cabbage—always admitting the merit of the genuine early York—the most estimable is the Vanack, of which G. Lindley observes in his catalogue, that "it is scarcely to be found in the seedsmen's lists, but is highly deserving of notice. By timely sowings the Vanack cabbage is always in season; it makes excellent spring coleworts, becomes a white-hearted cabbage very early, and pushes fine sprouts from the stump after the cabbages are cut. In quality it is inferior to none of the best cabbages."

Plant out *Brussels sprouts*, green and Scotch *kale*, *savoys*, and the later spring *broccolies*. The purple and white cape for later autumn supply must not be delayed a day. If the weather remain dry, enrich the land deeply with fine manure; select strong plants, fill the holes with water, and let the work be done about sun-setting: when growth

is established give one good quantity of guano-water (2 oz. to the gallon) to each root. In transplanting for the last time try the trench plan before recommended, as affording the most efficient safeguard from early frosts.

Cellery.—A beautiful and delicate vegetable when nicely grown, and to effect the desired object I copy a portion of what is deemed a truly good article, in the third column, p. 471, of the Gardeners' Chronicle. The writer deprecates the fashion now in vogue to aim at enormous gigantic plant. He says: "A stick four feet long and four inches in diameter may astonish, but the eatable part is often very small, and all the rest is good for nothing." A plentiful supply of celery for autumn and winter may be obtained from a bed about a yard square, sown in the open ground in spring, the young seedlings being thinned out until the bed contain about 324 plants, each having two square inches to grow in. Time and labour will be spared by transplanting at once (and now by the 1st day at latest) into trenches 12 inches deep, the bottoms with a good allowance of thoroughly rotted manure incorporated with the soil. Each plant is to have the long tap-root shortened, and the side off-sets entirely removed, but the fibrous roots and the soil adhering ought to be retained. No rank manure should be admitted, and indeed it would always be best to completely manure and double dig the intended plot three months in advance; and now, as the writer suggests, to employ "leaf-mould as perhaps preferable to any other compost, as by it the finest flavour will be secured. If the trenches are 18 inches wide, two rows may be put in (8 inches apart both ways), and much space will be thus economised. Moulding-up must be performed gradually, a little at a time; it has been found useful to throw in some lime or ashes at each operation, to prevent the ravages of slugs."

Peas, it is said, are failing fast in some gardens, and no crop is expected where abundance had been promised; the pods curl up, and no seed is formed; strange attacks take place, locally, on vegetation, but we hope and believe that there is no general disease. And here, as example is often more instructive than precept, we adduce the plan of a very fine, though not extensive, market-garden, laid out and cropped for the existing and ensuing month. Any amateur or cottager who possesses a plot of from one quarter of an acre to an acre and half of mellow loam, pretty free to the spade, and of at least 18 inches depth in its staple, may profitably imitate the arrangements of this garden. It is open to the full sun on every side, but screened somewhat on the east side by a high sloping bank of the Brighton and South Eastern Railway. The form is an oblong square, about 150 yards by 80. A few, and but a few, standard apple and pear trees are admitted, but these are objectional, and ought to be located in an orchard. Lines of gooseberries and currants extend in perfect order in the direction of the greater extent, ten yards row from row, the intermediate spaces being devoted to the market vegetable crops. The headland, or the outer north border, which slopes gently to the south, is occupied by several rows of French beans, now coming into full bearing, but principally by carrots and parsnips. Every saleable crop exists in great abundance, but there is no sea-kale, nor any of those vegetables which are chiefly used at the tables of the affluent, and are only to be found in the London market. The annexed sketch will exhibit the outlines.



The boundaries and four aspects are shown by the four exterior letters; the numbers 1 to 7 indicate the lines of gooseberries and currants—articles which command an immediate and extensive sale. *bl* is a plantation of black currants; *st* mark the site of three beds of strawberries—Keen's, British Queen, and another variety—the Elton is much liked hereabout. BB near N is the north border; below it at *r r* ridged for cucumber and hand lights; *l*, on the east slip, lettuce; *c* cabbages; *b* broad beans; P potatoes—some early shaws, the walnut leaved, and some later for winter—extend across the south, between 2 and 7; at *o* between 5 and 6 there is now a blank which has just been planted with potatoes for a *second* crop saved from the early diggings; they succeed well, I hear. The second space (between 2 and 3) is occupied by cabbage and

broccoli, a plot of raspberries and beans; the third by asparagus (*a*), onions (*o*), and young plants; the fourth at *sc* is a succession of scarlet runners in full bloom, rows three feet asunder: every plant is dwarfed by repeated nippings, so that it never rises above 18 or 20 inches high, and bears profusely. This practice prevails here in all our extensive market gardens. Below *rh* (a bold plot of rhubarb) there are onions, and the blank space *o* above named. Space 6 contains *c* carrots, *p* parsnips. Another plot and several single rows of broad beans are seen in sundry places, and space is left for August croppings.

I could adduce the examples of twenty or more large gardens, wherein the croppings are conducted upon plans somewhat similar, all productive of large supply for the neighbourhood, and even for London; but not one wherein there is a greater display of order and neatness. It is plain that by some variation in routine any crops in demand, as beet-root, sea-kale, borecoles, &c., &c., might be made to rotate. Still the plan may well serve as a model of a good kitchen garden, either for the gentleman, the farmer, or the cottager, allowance being made for cabability and extent.

FRUIT DEPARTMENT.

Budding.—Commence with cherries, apricots, and plums; then bud peaches, nectarines, pears, and apples. The state of the wood must decide; for the shoot from which the eyes are to be taken ought to correspond in age and condition with the stocks into which they are to be inserted.

Wall trees must now be regulated, and the bearers nailed close and orderly in, to ensure a due exposure of the fruit to the full sun. Attend to the ripening of stone fruits to prevent their destruction by flies, wasps, and earwigs, nets should be suspended so as to catch any that may fall off.

Prune vines, shortening the laterals to one eye, but preserve the old and best leaves.

Strawberry runner plants can be removed in showery weather to form new beds or long rows; let none be nearer than two feet from each other.

FLOWER DEPARTMENT.

There is no species of plant which is more ornamental and durable than the true scarlet *pelargonium*; several sorts with variegated leaves produce a charming effect in parterre, and so do all the garden varieties in their season. Every bed or border should be kept trim and neat, by removing litter, old flower stalks, leaves, &c., and then by careful raking of the surface soil after gentle showers. But now the season has come round to provide stock for the next year. All the pelargoniums can be propagated by strong cuttings taken off just below a joint, and set firmly in small pots, singly (all excepting the scarlets and common variegated), containing white sand and leaf-mould. Framing, with a very gentle heat, will hasten the production of roots; and when the first pots shall be well filled, each little plant should be shifted to a pot of larger size, with a portion of unctuous loam in addition. Those best flowering varieties which are to be preserved, must be cut very close back, kept dryish, and in a cool shady place till new shoots appear. They must then be taken out of the pots, some of the old soil shaken off, and most of the wandering roots cut away; after which they are repotted in a lower size pot, with a generous loamy compost, and placed in a frame, or under a hand glass, till removed to the greenhouse.

Never cut back and prune roots at the same time; for growth should recommence before the removal of roots.

"*Fuchsias, heliotropes, calceolarias,* the beautiful *cuphea platycentra,* and the extensive tribes nearly related to the above, or of similar habits, can be now increased by cuttings. A little prepared stable litter made into a hillock, and covered first with pieces of inverted turf, then with soil, sawdust, or old bark, will serve to support a few hand glasses or a frame, and afford heat enough for multiplying those common plants, and also the more simple greenhouse and stove species. The cuttings can be planted in a bed of earth, or what is better, be placed in pots, which should be plunged in either of the before-named materials." So we read in Paxton's Botany—a magazine which, collectively, has no rival for the information it furnishes.

Box-trimming should be finished, and also the cutting of ornamental hedges.

RETROSPECT.

The weather has been most benign; sufficiently showery to sustain the character of July, but warm and with many sunny days. Potatoes are again stated to be diseased; but nothing can look more healthy than do the immense breadths now growing: some haulm has been blackened by a frost in June, but the tubers are good. Prices, which not a month ago were quoted at £7, now have receded to £3 per ton—yet if people would plant diseased seed, what could they expect to gather. We are likely to do well and to have abundance—it is equally weak and wicked to sound the alarm for the love of lucre. Vegetables are beautiful. Of best stone fruit we hear little; but strawberries have been excellent and cheap, and so are the berries of all kinds. We obeerve but small promise of apples and pears, and general reports are at variance. Rain returned with very strong wind on the 20th of July.

Croydon.

METEOROLOGICAL DIARY—1848.

	Barometer.		Thermometer.			Wind and State.		Atmosphere.		
Day.	8 a. m.	10p.m.	Min.	Max.	10p.m.	Direction.	Force.	8 a. m.	2 p. m.	10 p. m.
	in. cts.	in. cts.								
June 21	30.17	30.14	53	70	63	N. West	gentle	cloudy	sun	fine
22	30.14	30.00	57	71	64	E.-E. by S.	lively	fine	sun	fine
23	29.92	29.70	58	74	63	E.-E. by S.	forcible	cloudy	cloudy	cloudy
24	29.71	29.74	55	66	56	W. by S.	lively	fine	sun	cloudy
25	29.73	29.95	52	62	59	West	variable	cloudy	cloudy	cloudy
26	30.10	30.10	55	68	59	Southerly	gentle	cloudy	sun	cloudy
27	30.00	29.90	50	63	58	S. West	lively	cloudy	cloudy	cloudy
28	29.90	29.95	55	66	56	Westerly	lively	cloudy	sun	fine
29	29.89	29.80	54	66	56	S. West	very brisk	cloudy	sun	fine
30	29.73	29.60	52	62	55	Westerly	very brisk	cloudy	sun	fine
July 1	29.62	29.80	47	62	53	N.W.-North	variable	fine	fine	cloudy
2	29.90	29.92	47	62	55	W by N-W S W	gentle	fine	cloudy	cloudy
3	29.83	29.87	50	63	58	S. West	gentle	cloudy	cloudy	cloudy
4	30.04	30.17	55	64	59	N. East	gentle	cloudy	cloudy	cloudy
5	30.26	30.26	56	78	66	South	gentle	cloudy	cloudy	cloudy
6	30.20	30.10	61	79	73	S. by W.-E.	fresh	fine	sun	fine
7	29.94	29.97	67	73	60	S. West	brisk	cloudy	sun	cloudy
8	30.09	30.15	53	65	57	S. West	forcible	fine	cloudy	fine
9	30.09	29.80	54	60	60	W. S. W.	forcible	cloudy	cloudy	cloudy
10	30.00	30.33	54	70	61	N. N.W.	gentle	fine	sun	fine
11	30.44	30.50	52	69	61	N. to N.E.	gentle	fine	sun	fine
12	30.50	30.50	55	70	65	E. by North	fresh	fine	sun	fine
13	30.52	30.45	56	73	67	E.-E. by S.	fresh	fine	sun	fine
14	30.42	30.29	62	76	70	S.E.-various	variable	fine	sun	cloudy
15	30.30	30.33	60	68	58	E. by North	lively	cloudy	sun	fine
16	30.35	30.29	50	70	63	N.E.-W. by N.	gentle	fine	haze	fine
17	30.29	30.20	55	73	65	N. West	gentle	fine	sun	fine
18	30.20	30.05	56	75	66	N.W.-S.W.	lively	fine	sun	fine
19	29.90	29.70	56	66	60	S. West	forcible	cloudy	cloudy	cloudy
20	29.55	29.60	57	67	55	S.W.-Westerly	forcible	cloudy	cloudy	fine
21	29.80	29.79	50	68	58	S.W.-South	brisk	fine	sun	cloudy

ESTIMATED AVERAGES OF JULY.

Barometer.		Thermometer.		
High.	Low.	High.	Low.	Mean.
30.30	29.390	76	42	61

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
68.35	54.6	61.925

Weather and Phenomena.

June 21: Genial fine day. 22: Clear, hot sun. 23: Cross currents of clouds; violent shower. 24: Lively, fine day; one shower. 25: Small rain; close and oppressive. 26: Changeable; much rain. 27: Quite rainy. 28: Changeable, with rain; fine p.m. 29: Rainy in night; improving. 30: Fine weather.

Lunations.—Last quarter, 23rd, 6 h. 27 m. morning. New moon, 30th day, 10 h. 19 m. night.

July 1: Fine; heavy, misty clouds form. 2: Some rain; chilly and ungenial. 3: Close rain; heavy showers. 4: Some sun; red sunset. 5: Splendid throughout. 6: Sun very hot (110°); balmy air. 7: Black, wavy cirrus; two rolls of thunder. 8: Slight showers. 9: Finer; gorgeous yellow sunset among clouds—*green* suffused between them. 10: Rain followed. 11: Fine change; glorious sunset. 12: Fine. 13: Red rays at sunset, in the E. by N.; W. threatens. 14: Changeable; sultry, with haze. 15: Much thunder in night; some rain; fine day. 16: Haze after noon; clearer afternoon. 17: Fine, with threatening clouds. 18: Very fine, early; clouds and wind. 19: Rainy forenoon; fine evening. 20: Fine, P.M., after rain and fierce wind. 21: Fine till afternoon; then rain clouds form; wet evening.

Lunations.—First quarter, 8th, 9 h. 30 m. Full, 16th, 9 h. 21 m. morning.

REMARKS REFERRING TO AGRICULTURE.

June affected the hay harvest; but so much had the grass increased, that a large bulk of hay was carried, and a good deal well secured. The corn has done well, and is turning fast. Some peas and Russian beans harvested. Oats, and Chevalier November-sown barley, nearly ripe. The rains have mainly assisted the root crops; and there has been sun and warmth enough to bring forward the beautiful cereal grains. JOHN TOWERS.

Croydon, July 21.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JULY.

The nearer we approach the period for harvest work, the greater is the amount of anxiety manifested by all classes, respecting the probable yield of the crops. That anxiety has been greatly increased in the past month, from the changeable state of the weather, and the conflicting accounts which have arrived from many parts of England on the subject of the potato disease.

To arrive at something like the truth on this all-important subject, we have caused numerous inquiries to be made in our large potato-growing districts, the result of which is, that many extensive breadths of land are producing potatoes which can never be consumed, except by pigs. Be it observed, however, that we do not maintain the opinion that the disease has, as yet, become *general* in the United Kingdom; but, on the other hand, we fear there is every reason to believe that it will spread, and have the effect of reducing the acreable produce.

Respecting the wheats, our accounts are various. In some quarters, the plant is thin upon the ground, besides having been attacked by the rust, red gum, &c. Should the atmosphere prove fine, a fair average growth may be calculated upon. The barley crop is fairly represented, but it is quite evident that the produce will not equal that of last season. Oats have certainly improved to some extent; and the same observation may be applied to beans and peas.

A few fields of wheat and barley have been cut and carried in some of the most forward districts: but up to the present time, owing to the rather large quantities of rain which have fallen since the 20th, harvest operations in general have been much retarded. Large breadths of wheat and other grain will, doubtless, be cut during the first week in August, should the weather prove favourable.

The produce of the hay crop has turned out good; but a large portion of it has been stacked in bad condition. The second cut is proving abundant, and of finer quality than the first. In most parts of England, the quantities of old hay on hand are still extensive; hence we anticipate comparatively low prices for that article during nearly the whole of the coming winter. In the early part of the month, meadow hay sold at improved quotations: towards its close, the demand became heavy, and prices had a downward tendency. Straw has met a fair demand at late figures.

The crop grasses have turned out somewhat productive. Samples of new carraway and rape-seed have been brought forward at Mark Lane and elsewhere, and which have mostly sold at fair quotations.

Notwithstanding several somewhat extensive fluctuations have taken place in the value of wheat, a full average amount of business, in the face of increasing supplies, has been transacted in that description of produce. At the close of the month, prices were a shade higher than at its commencement. Very large quantities of foreign barley have found buyers, at full rates of currency: but malt has commanded very little attention. The immense imports of oats have had a depressing influence upon the oat trade, and prices have fallen from 1s. to 2s. per quarter. Both beans and peas have produced more money. Indian corn and meal have been in improved request, at higher figures.

Comparatively speaking, the demand for all kinds of grain, as well as meal and flour, in the Irish and Scotch markets, has been steady, and prices have been fairly supported.

The shipments of grain to England have been trifling in the extreme, arising from the low prices obtained for oats during the whole of the month.

The live and dead meat markets have been toterably steady, and previous currencies have been fairly supported.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

The want of what may be considered remunerative prices has had the effect of inducing considerable caution on the part of the foreign breeders, in forwarding supplies of live stock to this country in the past month; hence, we have to report a further decrease in the arrivals from abroad, not only for London, but likewise at the various outports. It must be evident to all unprejudiced minds, that the importation of even large numbers of animals in a half-fat and, frequently, diseased state, can have but little effect upon the value of prime English stock, and further, that the foreigner will never secure good markets unless he can produce better beasts and sheep than those which have yet arrived hither since the passing of the tariff. Until very lately no sheep have been received, with anything like an average quantity of meat on their

backs; while the beasts have been principally old cows, fit for consumption in low neighbourhoods only. The increase in the supplies of English-fed beasts has sensibly affected the value of the foreign arrivals, upon which, we learn, heavy losses have been sustained by the shippers; and it is scarcely possible that any material increase will take place in the importations this year, unless, indeed, the prices of beef should advance considerably above their present point, but which is scarcely probable, looking to the large supplies which have yet to be received from the eastern counties, as well as from Scotland, and the extensive numbers ready in the north for the metropolitan and the principal country markets. Notwithstanding the great abundance of food, the epidemic has made its appearance to some extent in Norfolk, Suffolk, and various other parts of England, and which has produced most serious losses to the graziers. The foot-rot in sheep has not been generally complained of.

The Norfolk "season" for beasts having nearly drawn to a close, the actual weight of beef disposed of in Smithfield since our last "Review," has been comparatively small; yet it has proved quite equal to the wants of the buyers. Prime beasts, from their scarcity, have sold at a trifle more money; while the value of calves has been on the advance. Sheep have ruled very firm; but lambs have had a downward tendency.

The opening of the North British Railway has enabled the Scotch graziers to send portions of their supplies direct to London by railway conveyance; and it is generally considered that the traffic will considerably increase in future years, owing to the large numbers of beasts which are frequently lost at sea in making the passage by steam and sailing packets.

Great attention has been very properly directed to the spread of the small-pox in sheep within the last two months. That the disease was in the first instance imported from abroad does not admit of a doubt; and that it will increase to a frightful extent is certain, unless the utmost precautions are taken. It has been asserted that the disease has been long prevalent in Holland; but we have every reason to know that it principally exists amongst the Merino sheep in Germany. The question arises, how is the progress of the disease to be arrested? That can only be done by the immediate slaughtering of the animals suffering from its effects: the appointment of practical men to examine the stock prior to its being landed; and further, the establishment of a strict quarantine at places remote from those in which are placed English sheep waiting their "turn" for the London and other markets.

The imports into London in the course of the month have been as follows:—

	Head.
Beasts	1,666
Sheep	8,705
Lambs	302
Calves	1,706
Total	12,379
Imported in June, current year	13,401
Difference	1,022 less.

A comparison of the above imports with those at previous corresponding seasons will show an immense falling off. Thus:—

	July, 1846. Head.	July, 1847. Head.
Beasts	2,900	3,304
Sheep and lambs	10,800	12,091
Calves	900	1,458
Pigs	150	2

At the outports about 4,500 head of stock have been landed, chiefly from Holland and Germany.

The annexed statement shows the supplies of stock exhibited in Smithfield:—

	Head.
Beasts	16,878
Cows	495
Sheep and lambs	147,290
Calves	4,033
Pigs	2,350

SUPPLIES AT CORRESPONDING PERIODS.

	July, 1846. Head.	July, 1847. Head.
Beasts	15,876	15,773
Cows	577	586
Sheep and lambs	184,510	153,290
Calves	2,837	3,693
Pigs	1,727	2,228

The bullock droves have been derived as under:—

	Head.
Northern districts	900
Norfolk, &c.	5,000
Western and midland ditto	3,800
Other parts of England	2,250
Scotland	790

COMPARISON OF PRICES.

Per 8 lbs. to sink the offal.

	July, 1846.			July, 1847.			July, 1848.		
	s.	d.		s.	d.		s.	d.	
Beef, from	2	10	to 4	4	3	3 to 5	0	2	3 to 4 2
Mutton	2	10	4	4	4	0 5	4	3	8 5 0
Lamb	4	8	5	10	5	2 6	4	4	6 5 6
Veal	3	6	4	6	4	4 5	4	3	4 4 4
Pork	3	4	4	10	4	0 5	0	3	6 4 6

Newgate and Leadenhall markets have been fairly supplied with each kind of meat, the demand for which has ruled tolerably steady, at our quotations. Beef, from 2s. 8d. to 3s. 8d.; Mutton,

3s. 8d. to 4s. 8d.; Lamb, 4s. 6d. to 5s. 6d.; Veal, 3s. 6d. to 4s. 6d.; and Pork, 3s. 6d. to 4s. 6d. per 8 lbs. by the carcass.

SURREY.

The season of harvest is come, but our county does not show it in its most forward state. Rye is cut and in sheaf; so are some extremely fine oats; but we have not witnessed the reaping of wheat. Accounts by letter, as well as by personal communication, testify that in Essex, Hertfordshire, and Berkshire, a partial commencement has been made. Of the quality no one complains, though some have stated that the plant is thin upon the ground. We admit the fact, and particularly in reference to the thick-seeded on poorly farmed soils, wherein there are far more instances of "one-legged" culms than can be traced in the breadths sown with a quantity of seed so trifling that it is perilous to make allusion to it. *There* the plants have tillered to an extent that has completely filled the intervening spaces, and at the outlay of far less manure than must of necessity be applied to land which is taxed to the utmost extent of its supporting power by the innumerable seeds whose germination and support (*pro tempore*) it is called upon to effect. Thin sown crops remain longer green, and consequently are later in their harvesting. The Chevalier autumn-sown barleys are all but ripe; others sown more than usually late in the spring are beautifully fine, and begin to change colour. Tartary oats, of which we see many breadths, are not early. The entire season of the cereal crops (though still not late) has been retarded a full fortnight by the dark, gloomy state of the atmosphere; but the ground is not wet. The abundant rains of the spring, which had caused the underground river Bourn to run partially, did not saturate the earth; it is even now dry at no great depth below the surface. The month of July has been showery, but its fine intervals have fully balanced the account; there has been a great predominance of brisk winds, but the county has not suffered from heavy storms either of rain or hail, and we only wait the arrival of warm genial weather, with plenty of sun, to mature and safely harvest those abundant crops of every kind of grain which cover the land. Peas are carried, and some that we inspected are remarkably fine and full; but in this and all other crops, much depends upon soil and treatment—the latter particularly, as the finest samples grow upon land naturally very bad and stony. Beans have done remarkably well in the instances where that small hardy variety called "the Russian" was sown; the stalks were podded to their summits nearly; they were ripe and cut a fortnight since, whereas some fields of the older sort, much larger in their general habits, were then green and very partially podded. The root crops are admirable; white turnips, other varieties, and swedes, present a striking contrast with the poor wretched dwindlings of 1847 at the corresponding period; but the crowner is the kohl rabi, now progressing on very much increased breadth with great rapidity; it, and it alone, stood and triumphed during the scorching drought of 1847, and now, in this showery season, it does as well, perhaps is a little more luxuriant. Mangold, after the blanks were filled up, gave a good promise, and one which it will to all appearance fulfil. Clovers of the second growth are abundant beyond belief after the poor figure they assumed during the parching sun of May. The abundance of potatoes—which the alarm given, of a general state of disease, has caused to be digged up prematurely—has produced a very great fall in price. Disease *is* partially apparent in a blackened leaf, but as yet few can complain of the tubers. The "rot of the potato" was the theme in the periodicals of the northern counties twenty years ago; it became the subject of great alarm, which we combatted at the time; an epidemic has subsequently prevailed, but its type has varied. Time must prove its character and extent, but we are much deceived if the enormous breadths planted do not, in the long run, return us, in the course of the coming season, a crop amply sufficient for all the requirements of men and animals.—July 27.

BERKSHIRE.

The weather during the month of July has been exceedingly variable. For the first three days there was a continuation of the dull, damp atmosphere that prevailed in June; then followed two fine days; then again showery till the 10th day, when the weather cleared off, and there were bright sunny days till the 20th, since which it has been dull and damp. On the 14th loud thunder was heard, but its storm fell in the adjoining counties of Oxford and Buckingham, more particularly between Henley and Marlow, where it did considerable damage, some fields having been literally thrashed. Upon the whole, though so much rain has fallen, and there have been so many showery days, the quantity of rain has not once really saturated the ground. The wheat has progressed slowly on to maturity. It appears to be tolerably free from blight. As yet we have seen nothing to alter the opinion before expressed, that, from the thinness of the plant, and other causes, the crop will be under, rather than over, an average. The cutting of it has partially commenced; and should we now have some fine weather, it will in a few days become general. Barley has grown surprisingly, and on good soils

promises to be a fair crop; but on weak, badly-farmed land it is thin on the ground, and is looking sadly. Oats are now fairly out, and though short in straw, present a tolerably level head. We in the last report spake most favourably of the appearance of beans, but it is found that the bloom on the top part of the stalk did not set well, and therefore the crop will not be so abundant as was expected. Peas are extremely variable; in some places the crop is quite an average, in others so bad as not to be worth saving. Most of the early sorts are housed, and the teams are busy in preparing the ground for turnips. The haymaking is now nearly completed, and though they who waited had more favourable weather to secure the hay, still the grass had become so old that it will not have much "proof" in it. On the whole, the hay made in this county, in the present year, is but indifferent. We have everywhere a good plant of swedes and turnips; but from the hot days and frosty nights they have grown but slowly. There will remain a good deal of hoeing to be done during the harvest; still, as the barley and oats are so much behind the wheat, the difficulty to get it done will not be so great as we often experience. The trade for beef continues languid. Mutton, lamb, and veal sell well. At Reading, on the 24th, there was a poor show of cattle, and prices ruled low. At the great sheep and lamb fair at Overton, in Hampshire, on the 18th, prices were from 5s. to 6s. per head lower than last year. The stock was not generally in a condition so high as then, but the whole was sold off, as the fair was well attended. The potato disease is spreading—its baneful influence extends in this county; and as that seems to be generally the case, our wheat markets are rising considerably.—July 27.

ESSEX.

Harvest has already commenced in the more forward districts of our county, and reaping will be about general the 1st of August; in the more backward soils it will be, perhaps, a week later. At present, the prospects are in favour of a fair average crop, but nothing beyond; the sample (if well gathered) will be bright and plump. The straw, though not bulky, is dyeing a fine colour, except where it is laid, and there it is anything but of desirable appearance. We have neither seen nor heard complaints of blight or maggot to any extent, and they are by no means so prevalent as last year. Barley, generally, is backward, and will require some time before it will be ripe enough for the scythe, though here and there a spot or two is ripening off. It is very irregular; one-third must be below an average. The sample of the early-sown promises to be fine, and well made up, the showers and sunny weather being favourable to a plump grain. Oats have much improved, and promise a very fair crop. Beans are generally good and well podded, though short in the straw. Peas are not good, and ripen very irregularly; many of the early descriptions are now being harvested. Turnips and mangold wurtzel have not gone on so well as might have been wished, but with a continuance of the present weather a good crop of turnips may be calculated on. The mangold is a failure. We have an abundance of feed; our hay crop has been by no means large, and most of it got together in a bad condition; indeed, it is not yet all secured. We are sorry to hear small pox amongst sheep is prevalent in our county, and has been fatal in its attack. We cannot do better than quote the description of the disease as given by Mr. Simonds in his valuable work upon the subject (page 82), and which is a correct description of the disease as it began and terminated in our own flock:—"The infected sheep separate themselves from their fellows, and mostly lie down in a remote corner of the field. They exhibit a peculiar dejected condition; the head is held low, the ears are pendent, the breathing is quiet and short, the eyelids are swollen, and tears trickle down the face; the conjunctiva varies in shade from a bright scarlet to a Modena red; a mucous discharge flows from the nostrils, and increases in viscosity as the disease advances, often becoming sanguineous in the latter stages; yellowish spots, mucous vari, may likewise be seen scattered here and there on the pituitary membrane; the pulse early gives evidence of febrile excitation; at first it is quickened and somewhat increased in force, numbering about 95 beats in a minute; later on it becomes tremulous and indistinct, even over the region of the heart; but the patients show a great disposition to take water, and also to lick earth, which, mingling with the mucus of the nose, assists in clogging up the nasal openings, and renders the respiration more difficult. The alvine evacuations are but little changed in the majority of cases; in some, however, diarrhœa succeeds to a torpid condition of the bowels, and hastens the fatal termination. The temperature of the body is unequal, the feet and ears being generally cold, while the skin elsewhere is hot." We have given to all our sheep an ounce of salts, and also bled them, and believe it to have had a beneficial effect. No remedy except inoculation appears yet to have been discovered, and we advise our brother graziers, on purchasing a new stock, to insist on a warranty from the seller, for a greater scourge has hardly ever decimated our flocks.—July 25.

SOUTH WILTS.

In reviewing the growing crops, we found the wheats rapidly approaching maturity in the parishes on the plain commencing at Amesbury to Cholderton, Bulford, Milston, Figheldean, Haxton, Orcheston, St. Mary's and St. George's, Maddington, Rollestone, Chiltern, St. Mary's and All Saints, Heytesbury, and Warminster. Taking them altogether, they look exceedingly promising; some few complain that the ears are small, and the yield will be short, but the majority express an opinion that the produce will be an average one. The breadth of wheat is great; harvest is expected to be general by Monday the 31st instant; some (should the fine weather continue) talk of cutting earlier. Rye is already cut in many parts, and appears to be a fair average crop. Barley and oats better than they were expected. Potatoes about Lavington and its district an abundant crop of early, and every appearance of a great yield of the later sorts. The disease scarcely seen; here and there a spot, where a few specked ones have been noticed, but not like the prevalent complaint of the last two or three years. Taking the other part of this division of South Wilts, through Longbridge, Deverill, Titherington, Sherrington, Berwick, St. Leonard's, Bishop's Fontill, Chilmark, Teffont Magna, Fovant, Tisbury, Sutton Mandeville, Broad Chalk, Bishopton, Combe Bisset, on to Salisbury—the country looks beautiful,

and the crops very fine. The wheats generally healthy and strong, giving every hope of a full average yield; there may be some exceptions (as will be the case in the most prolific seasons), yet with fine, genial, sunny weather, the yield must be an average one: the ear and straw are fast changing, and in ten days reaping will be general. The spring crops vary considerably; yet, taking an extended opinion, the crops are much better than were two months ago even hoped for. The pea and bean crops are generally considered to be better than last year, and promising to yield near upon an average. Potatoes, in the whole of this district, are looking well, and producing amazingly; we heard of a few complaints of the haulm and leaves indicating an appearance of the last fatal disease; yet up to this time the bulb is healthy and fine, without the least appearance of being infected, although fear has driven many of the poorer class to fancy so, without the least shadow or reason. The hay harvest has at length been brought to a close; much has been stacked in bad condition, some having suffered much before being carried; but the after-crop fully compensates for such loss, by being great and very luxuriant: the same may apply to clover, trefoil, cinquefoin, and tares. In looking at the water and other meadows, abundant food is shown for nearly double the usual quantity of cattle and sheep. Flocks are large, and are doing well, yet prices are still high for all of the best description of fat beasts and sheep at Salisbury and other large markets around. The best beasts are making from 10s. 3d. to 10s. 6d. per score pounds; second-rate, 9s. to 9s. 6d. Sheep, full-mouthed Downs, 4s. 10d. to 5s. per stone of 8lbs.; larger do., 4s. 4d.; ewes, and common do., 4s. do. The calf trade has been cheaper, from the unusual quantity brought to market, many selling at from 8s. to 9s. per stone, yet the butchers still keep up their retail prices. The pig markets have been abundantly supplied, and selling at considerable reductions. The best wheat in the county, weighing 62 to 64lbs. per bushel, selling at from £12 to £13 per load of five quarters: bread at from 10d. to 12d. the 8lb. loaf. The wages of the farm labourers are—top figure, 9s. per week, some not giving more than 8s. do., strong single men having to labour for from 6s. to 7s. do. Wages of women and strong lads, 6d. a day; rent of cottages, 1s. to 1s. 9d. per week.

SOMERSETSHIRE.

It is no gratifying undertaking to report, when the facts stated are called in question, and put down to interested motives, and stated to be unworthy of belief; but the revelation of time will amply vindicate the assailed on the assailers, in the fact of the widely spread and destructive effects of the potato disease of 1848. For this county I can report for a greater part of its extent, and a good deal from personal inspection, of its very general prevalence in anything but a mild form, having been this week on nearly the highest ground cultivated with this root, where, and in the fine rich valleys of this county, it is seen and smelt, and on inspection found on the tuber; on digging, in some cases, more than half being already bad; and it is not confined to the early ones, but the same symptoms are manifesting themselves in the late ones, where the greatest injury will be sustained in loss of crop; although there is no estimating, even amongst the early ones taken out of ground, how many will be saved, and they continue to go off. This I have proved to some extent, under the most favourable circumstances. On the 12th we had very close, warm air, and it was from this day the rapid spread was noticed; and the summers the disease has prevailed—1845-6-8—will be found marked by extremes of heat and moisture, producing a great luxuriance of potato haulms. In 1845 the great heat was in June, and in July we had the heavy rains. The disease made its appearance in August; similar weather was experienced in 1846. 1847 was not marked with the extremes. This year we had the dry, warm weather in May, and not in June; and the disease *in* *July* made its appearance. As an evidence of its increase during warm, close weather, in 1846 there were a few weeks of cold, rainy weather; during this the stalks made shoots, which continued free from the spots as long as the temperature was low; but on its becoming higher, with clear, close weather, these showed symptoms of the disease, and were destroyed by it. Now, during the late cold weather the disease made but little progress; but, as I anticipated, directly after the change we experienced last week, it spread rapidly. Some of the late ones are still green, and only a few spots are seen; others that were planted very late are diseased. I was in hopes that, from planting early, a good many might be saved. I have 10 or 15 sacks dug this week—one lot picked carefully over; but yesterday I found it must be repeated; and those dug yesterday are worse than before: many of the finest have gone to the pigs. The poor are becoming concerned, and are buying them at 6d. per 20lb.; but they say half are bad; still I hope, with care of the early ones, we may save as many as last year, from the large quantity planted—much greater than 1847. But, from information just received, I fear, with every precaution, those put away as sound will not be found so. One party put away some picked ones, and now they are half bad. The consumption of bread has greatly fallen off since the disease has appeared, and the potatoes are forced off. I am obliged, from the evidence of facts, to report an unfavourable prospect of a wheat crop, from the red gum, great deficiency in kern, and lately from the wheat giving out and becoming prematurely ripe, having nothing in the ears (which are white, while the rest are green); these evils are much complained of, and will greatly lessen the produce, as far as we can judge. I should not estimate less than five bushels per acre deficiency compared with last year, from present appearances; on the moor lands it is the worst, and the best on well-cultivated dry soils. We expect to begin reaping the latter end of next week, but not generally before the end of the week after, unless we have a return of such weather as we had last week. The cutting of winter beans and early peas has commenced. Of these the crops are good; but of the late ones there is much complaint, as well as of the vetches left for seed. Barleys are backward, but looking fair for a large crop: this may be noticed of oats. On the whole our prospect of a crop of swedes is very good. The mangold has grown lately; but this crop will not be so good as last year. We have a large crop, and in the last ten days made very prime hay; but the early meadow and most proof hay has been spoiled, so that corn and artificials will be the more wanted for fatting. Mutton has sold the shade better; and poor sheep have not been supplied liberally to the fair, and have rather risen in value. Poor stock, and cows and calves are lessened in value. Poor pigs are still very high, and fat ones worth 10s. per 20lbs. Wool changes hands very slowly at 8d. to 9d. per lb. There is little cheese brought to market, the new not being fit; the make this year is likely to be large. We have some rain this afternoon: if it sets in wet, the potatoes underground will go off very fast, and it will be more difficult to preserve those we have.

AWFUL HAIL-STORM ON FRIDAY AND SATURDAY, THE 14TH AND 15TH JULY.

We extract from the country papers as full particulars as possible of this terrible visitation. It was nearly as destructive as that in 1843. From the Suffolk and Norfolk papers we learn that at Lavenham the hail-stones are described as "of tremendous size." At Barnham, the Grafton Arms Inn had scarcely a whole pane of glass left in the house; the church windows and nearly all the windows in the village were destroyed; the wheat, barley, and potatoes were completely stripped, so that only the bare straw remains standing or laying prostrate; old men, aged eighty and ninety years, never recollect so terrific a storm. It was very heavy round Maldon, and large hail-stones continued to fall for upwards half an hour, doing considerable damage. Near the Ditton Gate, on the Cambridge road, the hail-stones were nearly as large as hen's eggs, and the corn was thrashed to pieces. At Burnham, near Thetford, the fall of hail was most disastrous in its effects; the glass in the windows was broken, the corn was thrashed out, and the fruit trees stripped of their fruit. The crops around Chesterton have also suffered much, while the windows were smashed; Ixworth, Clare, and the southern part of Suffolk also experienced its virulence.

The *Lincoln Chronicle* states that at Stanground the storm was very heavy. The Rev. W. Strong had about 200 squares of glass broken with the hail, and the Earl of Aboyne, at Orton, about the same number. The wheat of Mrs. Chambers, of Orton, sustained much damage.

The following is from the *Banbury Guardian*:—At Deddington the greenhouses suffered. At Souldern the hail came down in great force, and several parties had their growing grain crops greatly injured. One farmer, who since the storm of 1843 had insured his crops, had neglected to do so this year, although pressed to do so by an agent of the Hail Storm Company, who was at his house at the time the storm was approaching, and he has suffered much injury. We have now in our office specimens of injured wheat, barley, beans, and peas from his farm. Others in the same locality who had insured, had their crops greatly injured. The experience this storm has added to what was before known, will, we should think, have the effect of inducing those who are exposed to injury from such causes, to take in future the necessary steps to protect themselves. At Prior's Marston, hailstones five inches in circumference fell, and caused great devastation to the fruit. The effects of the storm were severe on the farm of Mr. Painter, of Aynho grounds, who is insured; on Dr. Stephenson's allotments, in the parish of Fritwell, throughout the arable parts of Stoke Lyme, Fritwell, Somerton, and Souldern, where the only insured we hear of are Mr. John Painter and Mr. Boddington. We fear that considerable loss will be sustained, particularly by the tenants of cottage allotments. Much glass was broken at Deddington, and some crops injured there, but not to any great extent.

BRACKLEY.—The hail-storm, on the 14th instant, was unusually heavy, as was also the thunder and lightning. The crops were considerably injured, and a great deal of glass was broken. Mr. E. Taylor, jun., of the Widows Farm, will suffer to the amount of £300 from the injuries to his crops. The wheat crops of Mr. French, of Whitfield, are seriously injured, as are also those of Mr. Barrett, of Finmere. The conservatory of J. L. Stratton, Esq., was injured, and about 200 panes of glass were broken in the Brackley Union Poor-House.

We learn from the Buckingham papers that all the villages around Buckingham contribute a fearful quota of information of the effects of the storm. A great quantity of glass lights have been destroyed by the fall of ice and hail-stones; the glass work of the conservatories, forcing houses, &c., in Stowe gardens have been broken, as if they had been under a discharge of musketry. Indeed the havoc of windows and skylights about the town of Buckingham is considerable. Some of the worst features of the storm are to be found in the devastated state of some of the corn crops, which promised a bountiful prospect for the farmer, but they now lie levelled and beaten to the ground; evidence of the direful effects of a storm unequalled of late years, except by that one which many of our readers recollect—of August, 1843.

The *Bucks Chronicle* says "The storm raged awfully directly over Buckingham, where lumps of ice, three inches long, and monster hailstones, as large as walnuts, poured down in a stream of impetuosity seldom witnessed. The storm on Friday evening was extremely heavy, and did considerable damage around Bicester. The crops were in many instances much injured. The hail did great damage to Mr. Paxton's crops. The glass in the front of the house of Mr. Geo. French, of Finmere Warren, was almost all broken, and his crops are seriously damaged. The glass in the house of Mr. Painter, of Aynhoe Fields, was much broken and his crops injured.

The storm seems to have been very severe in Northampton. The *Herald* says—"At Kingsthorpe, and the neighbourhood of Moulton, Pitsford, Brampton, &c., hailstones of enormous size fell, several inches in diameter, levelling crops, stripping fruit trees, and literally strewing the roads with leaves and branches cut from the trees. All the conservatories in the neighbourhood have suffered more or less extensively. Labourers in the hay-field, and others who were unfortunate enough to be exposed, were much bruised and cut by the falling lumps of ice. The thunder and lightning, too, were exceedingly severe. At the seat of Earl Spencer, at Althorp, near this town, upwards of 20,000 squares of glass were destroyed by the hail, and considerable damage was done to the growing crops. Great numbers of pigeons, crows, and other birds were killed by the hailstones. The total damage sustained by his lordship is estimated at about £1,200. The growing crops of Mr. Beesley, of Brampton, were damaged to the extent of about £300. At Harlestone considerable damage was done to the growing crops, and the greenhouses of Mrs. Andrews and other families, were much shattered. A field of wheat at Boughton, belonging to Mr. Redgrave, was completely grounded, and is not expected to yield more than four bushels to the acre. At Kingsthorpe, hailstones, larger than hen's eggs, fell, stripping many trees of their leaves, and greatly injuring the crops, &c. A great deal of glass was destroyed in the conservatory of the Misses Boddington, as well as injury done to plants and shrubs.

At Hatton Hall the hail broke above twelve hundred squares of glass. Mr. Johnson, of Finedon Lodge, has sustained a loss of nearly £200 in his crops, and many others have suffered in a similar degree. Hailstones of various sizes were picked up and measured, and some were found to be nearly five inches in circumference. The Misses Boddington, at Kingsthorpe, had 400 panes of glass broken; and at Harlestone, Overstone, &c., the mischief was very extensive. The growing crops in the neighbourhood have sustained grievous injury. Many of the farmers have sustained losses to the extent of £300. The corn in many places was literally thrashed; and the turnips and mangel-wurzel chopped and shred, as if purposesly with a spade or hatchet. Labourers in the fields had their hands severely cut, the hail-stones resembling jagged pieces of ice of various edged figures, and measuring from four to seven inches in circumference.—*Northampton Mercury.*

At Wellingborough the storm is described as the most violent that has been witnessed there for many years. It commenced about six in the evening, and lasted till eight. The lightning was very vivid and the thunder exceedingly heavy. A great deal of damage was done to the crops in the neighbourhood, the hail-stones being as large as marbles. The streets in the town were completely flooded, and many of the drains were burst. At Hatton Hall about 1,300 squares of glass were broken in the conservatories and frames.

From our Daventry correspondent we have received the following:—"On Friday afternoon this town and neighbourhood were visited by one of the most severe thunder and hail storms which has occurred here for many years past, and which, we regret to state, has done great injury in various ways. The hail-stones were of an enormous size, in some instances measuring six and seven inches in circumference, and

we have been informed that at Norton Hall, Brockhall, and other places in this immediate vicinity, the glass forming the green-houses, &c., has been almost entirely shattered."

Our Rugby correspondent says that nothing was felt of the storm in that town, but that at Over Newton, three miles from Rugby, considerable damage was done to the crops by the hailstones, some of which measured three inches and a-half in circumference.

Hail-stones were taken up in Buckingham which measured 3⅜ inches. The damage altogether is estimated, including Buckingham and its neighbourhood, to be £2,000.

The Editor of the *Northampton Herald* says, in giving his own personal observation of what he saw—"The rain, which came down in torrents, amid the most awful crashes of thunder and flashes of forked lightning, was followed by hailstones of ice varying in size from the marble to a large-sized egg, which fell, in some places, for upwards of half an hour. When the storm had ceased, some of the roads looked perfectly green from the leaves cut off by the hail that had fallen. Many fields of wheat were perfectly flattened, and in the bean fields not only the heads of the plants have been broken off, but the pods below have been cut off all down the stems. It is to be feared that many persons that have not protected themselves in the Hail Storm Insurance offices will be severe losers. We hope the experience of the past fortnight will act as a warning to those that have not adopted such a wise precaution."

A Cambridge payer says a very heavy and destructive hail-storm passed over some parts of the counties of Cambridge, Suffolk, Northampton, Oxford, and Surrey, on Friday evening, the 14th instant, causing great damage to the growing crops of corn and vegetables. In the parishes of Chesterton, Cottenham, and Teversham, Cambridgeshire, severe losses were sustained. On the farms occupied by Mr. Robert Sparrow, at Chesterton, the estimated damage on 58 acres of wheat amounts to 87 loads; and on 60 acres of barley, a loss of at least 58 quarters; on 18 acres of beans, 10 quarters: fortunately Mr. Sparrow is insured. On the farms occupied by Mr. Webb and Mr. Walker, of Teversham, great injury has been done to the crops; on 32 acres of barley, the latter has lost nearly 51 quarters. At Cottenham, Mr. Phiper's corn has been injured to the extent of four bushels per acre; but all these parties are, we believe, insured, and will be paid their losses. The storm at Bury St. Edmund's was most terrific, and the hail was very large in size. In parts of Northamptonshire and Oxford, the injury sustained by farmers is very great, and we fear that many of them are uninsured.

From Kent we learn that, "in the neighbourhood of Ickham and Wickham great damage has been sustained in the corn-fields and hop-grounds. On the northern side of the coast the storm was not experienced."

CRANBROOK.—The thunder-storm here on Saturday morning last was as violent and terrific as at Hawkhurst, Northiam, Rolvenden, and vicinity, and several houses and furniture much shattered, trees rent asunder, and a barn at the latter place, belonging to Mr. Bishop, was ignited by the lightning, and burnt down. The hail about five in the morning was very violent at those places.—*Kent Herald.*

A heavy thunder storm passed over Cambridge on Friday evening, and a great deal of hail fell, doing much damage to the crops in the neighbourhood. At Chesterton the tempest was very violent, and the hail disastrous in its effects, thrashing the corn out as if it had passed under a flail; besides breaking the glass in the green-houses and windows of the dwelling-houses. At Wisbeach the storm raged for several hours. There was a considerable fall of rain, hail, and ice, doing the crops much damage.

The *Cambridge Independent* says: "From all we can learn the storm appears to have been very general, and very large hailstones fell at Chesterton and Ditton, and great damage has been done to the crops in consequence. The principal sufferers are Mrs. Sparrow, Mr. Few, Mr. Ablett, and Mr. Peck, who have had corn and wurzel crops destroyed to the value of between £800 and £900. The gardens are much injured, and the windows in many houses broken."

HENLEY.—In this neighbourhood considerable damage was done. Out of 70 acres of wheat in a field on the farm of Mr. Deane, at Hambleden, Bucks, 50 are completely destroyed; the crops of Mr. Hobbs, a neighbour, have sustained great injury, and not merely are the ears broken, but the hail has split the stalks. The whole has since been cut down, as it was useless to allow it to stand. Mr. Piercey is likewise a sufferer to some extent by the storm.—*Reading Mercury.*

REVIEW OF THE CORN TRADE

DURING THE MONTH OF JULY.

During the greater part of the month we experienced forcing weather and the grain crops progressed rapidly and regularly to maturity. Early in July a good deal of rain fell, and apprehensions were beginning to be entertained that we should have a wet summer; the subsequent sunshine tended to dissipate these fears; and though we have since had a return of rain, should the period which must yet intervene before the crops can be gathered be auspicious, the harvest will probably turn out better than, from the unpropitious character of the spring, the most sanguine could have expected. Wheat, though rather thin on the ground, and not altogether free from defects, promises to be a fair, if not a large crop. It will not, it is true, be so productive as last year; but we are disposed to think that, as compared with usual average seasons, there will be no great falling off either in quantity or quality.

As yet, reaping has been only partially commenced, and nothing can therefore be positively said as to the produce to the acre; but from careful observation and inquiry, we feel inclined to believe that there exists little reason to apprehend any material deficiency. The copious showers which fell in the latter part of June and the beginning of July, followed by intense heat, wrought an astonishing improvement in all the Lent-sown crops.

Barley, which at one time wore a very bad appearance, recovered wonderfully, and now promises well. In some of the southern parts of the kingdom the cutting of the early sorts has already begun; and by the reports from Norfolk, Suffolk, and other large barley-growing counties, we are led to hope that, notwithstanding the unfavourable manner in which the sowing of this grain was in many instances completed, the yield will prove tolerably good.

Oats are not so well spoken of, having, it is said, been rather extensively attacked by a worm or grub; and, from all we can collect, we should be disposed to doubt whether an average quantity of oats will be produced in England. In Ireland the breadth sown is large, and, as yet, we hear of no complaint from thence.

Beans, which during the drought in May were regarded as almost a failure, now promise a better crop than in any previous season for some years past; and peas have also improved amazingly, as far as the yield of grain and pulse is concerned; we have, therefore, no great apprehension.

With respect to potatoes, we cannot at present speak so positively. That the disease to which this root has been subject since 1845 has again attacked the crop cannot admit of doubt; well-authenticated cases of the loss of a part of the early sorts by precisely the same disorder as last year being numerous.

The blight appears, however, to be of a more partial character than in former seasons; whether this is owing to greater care having been bestowed on the culture, or whether the disorder is gradually diminishing in a natural way, we are not prepared to determine; but that it was less general in 1847 than in 1846 is certain, and hitherto there is reason to expect that the produce will be as great an improvement on that of last year, as the last was over that of the preceding season—we mean in regard to the extent of the disease, for as to quantity there can hardly be a comparison, the breadths planted having varied greatly. In 1847 the fear that the crop might be lost caused many growers to employ their soil for other purposes, and nothing like the usual breadth was devoted to potatoes. The comparatively good result, and the high prices realized for the produce, led to the opposite plan this spring; and as great, or nearly as great a breadth was planted as previous to the first appearance of the disease.

If, therefore, the blight should, as we trust it may, prove partial, there would be an abundance of this useful root, as a recompence for any deficiency which there may be in the grain crops.

The early part of the hay harvest was very tedious and expensive, and a good deal was carried in bad order; latterly, however, the weather has been all that could be wished, and the grass not cut previous to the 9th July has been all got up in excellent order. The accounts as to the yield of hay vary greatly; on the whole we are inclined to think that it will fall short of the produce of 1846 or 1847, without, however, being a very defective crop.

The trade in grain has since our last been mainly influenced by the weather; in the early part of the month there were symptoms of firmness, and if the rain had continued a few days longer, prices would probably have advanced; the settled appearance which the weather afterwards assumed effectually checked the upward movement, and the value of most articles receded, as well in the agricultural districts as at the leading provincial markets. During the last week, however, owing partly to the return of rain and partly to the spread of the potato disease, quotations have again risen.

The changes in this respect will be more fully referred to in our notice of the transactions at Mark Lane, in a subsequent part of this article. As to the future range of prices, so much must still depend on the weather, that no positive opinion can be safely ventured on; as, however, the state of the stocks and the probable extent of future supplies may afford some data for forming a judgment, we shall devote a short space to the consideration of those subjects.

In reference to the quantity of wheat held by merchants, dealers, and millers, we have no hesitation in affirming that it is extremely small, but that the wealthier class of farmers have a larger proportion of the last crop on hand than usual at the corresponding period of the year, we feel equally well satisfied. The manner in which they may hereafter supply the markets will, of course, be in a great measure regulated by the view they may take of the result of the harvest; if it should be found that the crop is a good one, and that prices are not likely to go higher, the knowledge that the duty on foreign is to be remitted in February may render our growers anxious to sell previous to the markets being thrown open to foreign competition; and we are consequently of opinion that nothing but an adverse harvest, or a further spread of the potato disease, would cause prices to advance materially.

As to the probable extent of the foreign supplies, nothing can as yet be said. The prospects in regard to the harvest are said to be highly promising all over the north and north-east of Europe, the United States of America, and Canada. In the south and south-east of Europe the crops are mostly secured, and, as yet, we have heard of no complaints regarding the yield.

Still we do not expect any immediate increase in the arrivals from abroad: the present position of the trade here is not such as to encourage our merchants and speculators to send out orders to purchase; and foreign shippers are likely to keep their corn on the other side, where the expenses of storing are more moderate, until the time arrives when they may import into Great Britain free of duty.

Latterly some slight increase has taken place in the deliveries of wheat from the home growers, whilst the arrivals from abroad have fallen off; the

supplies into the port of London have, however, on the whole, been moderate.

On the first Monday in the month (3rd ultimo) there was a good show of wheat at Mark Lane from Kent, but comparatively little from any of the other home counties; the trade opened with considerable animation, and the stands were cleared at prices 1s. to 2s. per qr. above those current on that day se'nnight. During the following fortnight no material change occurred in quotations; but in proportion as the weather improved, the disposition to realize increased, and on the 16th July we had a larger display of samples on the Essex and Kent stands than on any previous occasion for many preceding weeks. The increased supply, and the then settled appearance of the weather, combined to render the millers cautious in their operations, and factors were compelled to give way 2s. to 3s. per qr. before any progress could be made in sales. During the succeeding week the complaints relative to the potato disease became general, and the weather at the same time changing for the worse, the decline of the 16th was wholly recovered on the 23rd July, and since then a further rise of 1s. to 2s. per qr. has occurred.

The arrivals of wheat from abroad have been on a moderate scale, the total quantity received having amounted to only about 40,000 qrs. Nearly the whole of this supply has been warehoused in bond, importers being unwilling to pay the present high rate of duty; there has, consequently, been no addition to the stock available for consumption, and holders have manifested much firmness. When English wheat fell 2s. to 3s. per qr. on the 16th ult., the decline submitted to on foreign was not more than 1s. to 2s. per qr.; whilst the rise which took place the week following was quite as great on foreign as on that of home growth. Superior qualities of red, such as the best shipments from Rostock, have recently commanded 54s. to 55s. per qr. duty paid, and good parcels of 61lbs. to 62lbs. weight 50s. per qr. Within the last week or ten days some inclination has been evinced to make purchases free on board at foreign ports, and we believe that for Rostock 45s. to 48s. per qr. cost and freight, and for Danish 44s. per qr., have been realized. These purchases would appear to indicate a growing disposition to speculate; for unless prices advance in our market, and the duty recedes, the parties buying at the rates named would not gain by their venture.

The top price of flour was advanced by the town millers to 46s. per sack on the 3rd July, and has since remained stationary. The effect of the rise was, in the first instance, a falling off in the demand; but latterly the inquiry has again improved, many of the bakers being apprehensive of a further advance, if the upward movement in wheat should continue. The value of ship flour has undergone very little change since our last, less influence having been produced by the fluctuation in the top price than is usually the case. Of American the receipts have been scanty, and good fresh parcels have commanded 28s. per brl. duty paid.

That the failure, or even a partial failure, of the potato crop would later in the year cause a greatly increased consumption of bread stuffs is self-evident, but the immediate effect of the alarm on this subject is likely to have a contrary tendency. The fear that the potatoes may not keep renders the growers unwilling to run the risk of holding, and they are consequently being hurried to market as fast as dug. This for a time must occasion a glut, and prices of potatoes have already been reduced so as to render them a cheap article of food. The poorer classes are, therefore, consuming potatoes largely, and this will probably continue to be the case for a time, and interfere with the demand for flour.

The supplies of home-grown barley have nearly ceased: this has, however, caused no inconvenience, as the receipts from abroad have been amply sufficient to provide for our wants. A considerable portion of the foreign barley has, however, been taken off the market lately, by buyers from different parts of the country, and it would appear that prices have at length touched the lowest point. Danish, not in good condition, but weighing 50lbs. per bush., was, when the depression was the greatest (about the middle of the month), sold at 20s., and very good 53lbs. qualities as low as 24s. to 25s. per qr. duty paid. Since then prices have crept up 2s. per qr., and the diminished quantity on sale has imparted something like confidence to holders. In English barley very little business has been done, and quotations have remained nominally unaltered.

Malt has not at any period of the month been pressingly offered for sale, and the general impression is that the moderate character of the stocks on hand will cause this article hereafter to rise in value.

The arrivals of oats from our own coast, Scotland, and Ireland, have been quite insignificant throughout the month, but the smallness of the home supply has not been felt, as upwards of 100,000 qrs. have been received from abroad. The greater proportion of the foreign supply has consisted of inferior qualities, and many of the cargoes have come to hand in very indifferent condition; hence these kinds have suffered greater depression than really good heavy corn. The reduction in the value of fine oats, such as the best English and Scotch feed, since the close of June, scarcely amounts to 1s. per qr., whilst ordinary sorts have receded quite 2s. per qr. within the same space of time. Prices are now moderate, and should the potato disease

prove so general as many parties apprehend, the increased consumption of oatmeal which would thereby be caused would probably occasion a rise to take place in the value of this grain. Tolerably good parcels of foreign may at present be bought in the London market at 20s. per qr.—a price at which it will not pay to import, quotations being relatively higher at those ports on the continent from which we usually derive supplies; meanwhile there is little prospect of large arrivals from Ireland, the stocks of old being nearly exhausted; and though the crop on the ground is well spoken of, it cannot be made available for shipment for some time to come.

Beans of home growth have been brought to market sparingly; but the article being comparatively little used at this period of the year, and the growing crop having much improved in appearance since the spring, prices have gradually receded, and the best qualities can at present be bought at 38s. per qr., whilst ticks may be quoted 32s. to 33s. per qr. Egyptian beans were at one time offered at 22s. to 23s.; latterly, however, the demand has improved, and prices have advanced 2s. to 3s. per qr. from the lowest point, within the last ten days.

Several parcels of peas of the present year's growth have appeared at Mark Lane, mostly of fine quality and in good condition. New white boilers have been sold at 38s., and grey and maple at 36s. per qr. Of foreign white peas there is still a good stock in granary: in the early part of the month they were quite neglected; within the last week or two (since the potato disease has been spoken of) the article has excited attention, and some purchases have been made at prices varying from 35s. to 36s. per qr., according to quality.

Indian corn has been more affected than any other sort of grain or pulse, by the unfavourable reports relative to potatoes. In the beginning of the month the best qualities could scarcely be placed at 32s. per qr.; subsequently a rise of 2s. to 3s. per qr. took place, and at present many holders refuse to sell fine Galatz below 38s. to 40s. per qr. A portion of this rise has unquestionably been caused by speculation, and in anticipation of a large demand to feed the poorer classes in Ireland. How far this expectation will be realized will depend on the result of the potato crop in Ireland; if the blight should fortunately prove only partial, the high rates now current for Indian corn would not, in our opinion, be maintained.

We shall employ the remainder of our space to lay before our friends the last information we have been enabled to collect of the state of the corn trade abroad.

By the most recent advices it appears that the prospects for the harvest were promising over the greater part of Europe; but as stocks were every where reduced into a narrow compass, prices had been tolerably well supported, notwithstanding the dull accounts from hence; when, therefore, the news of the recent rise in the value here shall have been received, an advance in quotations is likely to ensue.

At Danzig on the 18th July, fine high mixed wheat was worth 43s. to 44s. per qr., and other sorts were held at corresponding rates. The business actually done had not been important, the prices asked having in most cases been above what buyers had been disposed to pay. The water in the Vistula had risen; which would, it was calculated, allow supplies which had previously been much retarded to come down from Poland. The crops were well spoken of, and the reaping of rye had been commenced.

From Rostock, Stettin, Stralsund, &c., the accounts relative to the probable result of the grain harvest are generally of a satisfactory character, and as yet we have heard nothing of the potato disease from the Baltic. In Holland and Belgium it appears, on the other hand, to be fast spreading, and all articles suitable as substitutes for potatoes had consequently risen materially in the Dutch and Belgian markets.

The latest quotations for wheat, from the Lower Baltic ports, were 38s. to 42s. per qr. free on board, according to quality, rate of freight, &c.

At Hamburgh, stocks of fine wheat had, we are informed, been completely exhausted, and little or no effect was produced there by the news of the fall of 3s. per qr. which occurred at Mark Lane on the 17th inst., but that the subsequent rise here will cause considerable excitement on the other side may be regarded as certain.

From the south of Europe, where the harvest is mostly finished, the accounts are rather contradictory, but no material deficiency is anywhere complained of; prices were, however, higher at the Mediterranean than the Baltic ports, and should we require imports of consequence, attention would in the first instance be directed to the north.

From the United States we have advices of very recent dates, the New York letters being of the 12th inst. The crops were said to wear a very promising aspect, and an abundant harvest was calculated on. Meanwhile prices had fluctuated but slightly, the stocks at the principal ports being by no means considerable.

CURRENCY PER IMPERIAL MEASURE.

Shillings per Quarter.

	NEW.		OLD.	
WHEAT, Essex and Kent, white	50	to 58	52	to 58
Ditto red	47	52	47	52
Norfolk and Suffolk	47	51	—	—
Lincolnshire and Yorkshire	—	—	46	54

Rye	31	33	—	—
Barley.. Essex, com. Malting	31	32	—	—
Kent, Norfolk, Distillers' & Grinding	26	29	—	—
and Suffolk.. Chevalier	32	33	—	—
Malt.. Essex, Norfolk and Suffolk	—	—	55	58
Kingston, Ware, and town made	—	—	57	60
Oats.. Norfolk, Cambridgeshire, Lincolnshire, and Yorkshire, feed	—	—	18	21
Ditto, Poland and potato	—	—	20	23
Northumb., Berwick, & Scotch potato	—	—	22	25
Ditto, feed	—	—	20	22
Devon & West Country, feed or black	—	—	15	18
Dundalk, Newry, and Belfast, potato	—	—	20	22
Ditto, feed	—	—	18	21
Limerick, Sligo, and Westport, potato	—	—	19	22
Ditto, feed	—	—	18	21
Cork, Waterford, Dublin, Youghal, and Clonmel, black	—	—	14	18
Ditto, white	—	—	16	20
Galway	—	—	12	14
Beans.. Ticks	32	34	—	—
Harrow and small	34	38	—	—
Peas.. Boiling	36	38	—	—
Hog and grey	35	36	—	—
Flour.. Town made (per sack of 280 lbs.)	—	—	41	46
Norfolk and Suffolk, household (do.)..	—	—	35	38

FOREIGN GRAIN.

	Shillings per Quarter.	
Wheat.. Dantzic and Konigsberg, finest high mixed	FREE.	
white	52	to 59
Ditto, good mixed	50	54
Ditto, red mixed	46	48
Stettin and Rostock	51	55
Danish	46	50
Hamburgh and Pomeranian	48	52
Black Sea (nominal) hard to soft	40	45
Riga, St. Petersburgh, and Liebau, soft	35	45
Canada	49	51
Spanish	52	56
Buck or Brank	32	34
Indian Corn	32	36
Barley.. Hamburgh, Dantzic, Konigsberg, and Riga	24	27
Ditto, Grinding	23	25
Danish, Mecklenberg, and Pomeranian	21	27
Oats.. Dutch, brew, & Poland, Friesland, & Groningen	20	24
Danish and Swedish	15	19
Russian	16	19
Beans.. Tick	32	35
Small	35	37
Mediterranean	25	26
Flour.. United States	22	27
Canadian	22	26
Indian Corn Meal (per brl. of 196 lbs.)	14s. 6d.	to 15s.

IMPERIAL AVERAGES.

Week Ending:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.	Rye. s.	d.	Beans. s.	d.	Peas. s.	d.
June 10, 1848..	47	8	31	7	20	9	28	0	38	4	37	0
June 17, 1848..	46	10	30	10	20	8	31	7	37	8	38	0
June 24, 1848..	46	11	31	2	20	9	29	4	36	11	38	4
July 1, 1848..	48	2	30	5	20	10	30	2	36	8	38	2
July 8, 1848..	48	10	30	1	20	8	31	0	36	8	37	4
July 15, 1848..	49	1	29	0	20	9	31	0	36	6	37	3
Aggregate Average of the six weeks which regulates duty	47	11	30	6	20	9	30	2	37	2	37	8
Comparative Average same time last year	85	10	50	8	32	6	67	3	55	5	56	6
Duties	10	0	2	6	2	6	2	6	2	6	2	6

HOP MARKET.

BOROUGH, Monday, July 24.

We can notice no improvement in our market, which continues heavy at barely the quotations of last week.

Sussex Pockets ..... 42s. to 46s.
Weald of Kents ..... 44s. to 48s.

PRICES OF SEEDS.

BRITISH SEEDS.

Cloverseed, red 30s. to 40s.; fine, 43s. to 48s.; white, 30s. to 50s.
Cow Grass ..... 30s. to 52s.
Linseed (per qr.).. sowing 56s. to 60s.; crushing 42s. to 48s.
Linseed Cakes (per 1,000 of 3 lbs. each) £11 10s. to £12 10s.
Trefoil (per cwt.) ..... 15s. to 21s.
Rapeseed, new (per last) ..... £28 to £30
Ditto Cake (per ton) ..... £5 15s. to £6
Mustard (per bushel) white .... 6s. to 9s.; brown, 8s. to 10s.
Canary (per qr.) ..... 75s. to 77s.; fine, 77s. to 80s.
Tares, Spring, per bush. ..... 5s. 6d. to 6s. 6d.
Carraway (per cwt.) ..... 30s. to 31s.; new, 32s. to 33s.

FOREIGN SEEDS, &c.

Clover, red (duty 5s. per cwt.) per cwt. ..... 28s. to 37s.
Ditto, white (duty 5s. per cwt.) per cwt. ..... 22s. to 45s.
Linseed (per qr.) .. Baltic 42s. to 46s.; Odessa, 42s. to 46s.
Linseed Cake (per ton) ..... £8 to £9
Rape Cake (per ton) ..... £5 to £5 10s.
Coriander (per cwt.) ..... 16s. to 20s.
Hempseed (per qr.) ..... 45s. to 48s.

WOOL MARKETS.

BRITISH WOOL.

LEEDS, July 21.—We have not any change to report this week. Prices are firm, but the manufacturers are very cautious in their purchases, and unwilling to give an advance.

HUDDERSFIELD, July 18.—The demand for middle quality wools has improved during the past week, and no surer indication of an improved feeling in the country can be taken than that wools have fetched improved rates in the public sale room in London.

HULL, July 18.—We had a good show of wool, with a fair attendance of buyers. Nearly all sold up at last week's prices.

SALISBURY, July 18.—The general aspect of the trade unpromising; prices as at Andover fair—best teg, 9d. per lb.; inferior, 8d.

YORK, July 20.—The show of wool was rather small, which has been well sold up without any improvement in price. Good hog 11s. 6d., hog and ewe 10s. 6d. to 11s., ewe 9s. to 9s. 6d. per stone.

DEVIZES WOOL FAIR.—The supply was small, and the demand pretty good; the greater part being sold. Prices ranged from 21s., regular flock to 24s. 6d., at which latter price two lots, belonging to Mr. Richard Coward, of Roundway, and Mr. Butler, of Urchfont, were sold; they were of excellent quality, probably the finest in the county.

DONCASTER, (Saturday last.)—There was only a moderate supply of wool shown this morning. We note no alteration in value from last week, the demand being active at last week's prices. Super clips, 11s. to 12s.; Lincolnshire parcels, 10s. to 10s. 6d.; inferior, 9s. to 9s. 6d.

AYR WOOL FAIR.—There was very little done. The sales are scarcely quotable—sellers seeming not to care for business, hoping for a change on account of the improving prospects of trade. This will be better determined after the returns from the fairs of Fortwilliam, Hawick, and Inverary. Black-faced and Leicesters brought about 17s.

LIVERPOOL, July 22.

Scotch.—There has been nothing doing this week in laid Highland. All are waiting with anxiety the result of the Scotch fairs going forward this week. In crossed and Cheviot nothing doing.

		s.	d.		s.	d.
Laid Highland Wool, per 24lbs.		5	6	to	6	0
White Highland	do	7	6		8	3
Laid Crossed	do .. unwashed	7	0		8	6
Do.	do.. washed	8	0		9	0
Do Cheviot	do... unwashed	8	0		11	0
Do.	do... washed	11	6		14	0
White do.	do.	16	0		18	0

Foreign.—The public sale in London came to a close on Tuesday, since which we have had rather more doing at full prices.

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.

THE FARMER'S MAGAZINE.

SEPTEMBER, 1848.

No. 3.—Vol. XVIII.] [Second Series.

PLATE I.

HEREFORD BULL.

The subject of our first plate, "Coningsby," is a bull of the Hereford breed; and was bred by Mr. J. N. Carpenter, of Eardisland, near Leominster, Herefordshire. He was exhibited by him, at the Royal Agricultural Society's Show at York, in July last; where he obtained the first prize of forty sovereigns, as being the best bull in the first class of Herefords, calved previously to the first of January, 1846.

"Coningsby" was calved August 11, 1845; therefore, was nearly three years old when exhibited for competition; he is got by "Quicksilver" (355 in Eyton's Herd Book), dam ("Pretty Maid") by "Sherriff" (356)—"Sherriff" by "Old Sovereign" (404).

"Quicksilver" is by "Hope" (439)—"Hope" by "Byron" (440), out of "Cotmore's" dam (404).

In 1846, the subject of our plate won a cup, given by the late Sir Charles Morgan, at the Tredegar Show, as the best yearling bull. In 1847, at the Royal Agricultural Society's Show, at Northampton, the second prize of ten sovereigns was awarded to him: he also won a cup at the Hereford Society's Meeting, at Candlemas, 1848, as the best three years old bull.

PLATE II.

SHEEP OF THE NEW OXFORD BREED.

The sheep, which form the subject of the second plate, are of the new Oxford breed, bred by Mr. C. Large, of Broadwell, near Lechlade, Gloucestershire, and obtained prizes of the Royal Agricultural Society as the best of the long-woolled breed not Leicesters.

The character of Mr. Large's flock is so well known that it is wholly unnecessary to offer any remarks respecting it; the most concise, and at the same time the most conclusive, evidence of its excellence will be found in an enumeration of the long list of prizes which he has obtained at the several meetings of the Royal Agricultural Society, thus proving the superiority of his sheep when put in competition with all England.

Mr. Large has won the following prizes at the Societies' meetings:—1839, three prizes; 1840, two prizes; 1841, two prizes; 1842, four prizes; 1843, one prize; 1844, two prizes; 1845, two prizes; 1846, two prizes; 1847, four prizes; 1848, one prize.

The subjoined remarks on this breed of sheep are taken from Mr. Robert Smith's essay on the management of sheep, to which the prize of the Royal Agricultural Society was awarded:—

"The *New Oxfords* are termed 'Long-wools;' but more from the circumstance of their not coming under the denomination of Leicesters than from their extra wool-bearing properties. They are bred principally in Oxfordshire and the surrounding districts, particularly in the neighbourhood of Broadwell, the residence of Mr. Charles Large; Charlbury, the residence of Mr. Smith; and Sevenhampton, the residence of Mr. Handy—the most eminent breeders, and to whom great credit is due for their exertions in raising this valuable breed to its present high state of perfection. They are of large dimensions, and have a great propensity to fatten, arising chiefly from their wide frame, quietude, and open texture of flesh, which is of quick growth, and consequently expands itself more rapidly than many other qualities; but they do not possess that exactness of form peculiar to smaller animals, though they have a better carriage. For many years the male animals have been eagerly sought after, with a view to increase the size and frame of other long-woolled breeds."

INFERIOR GRASS LANDS.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

There is little doubt that the conversion of considerable portions of the inferior descriptions of grass lands into arable, is gradually taking place. It is true that in many districts this quiet march of improvement is retarded by several natural and artificial obstacles; but still the course of the plough is onward. The common neglect of every means of improving these pastures is one great cause of their rapid destruction, since that land whose natural produce becomes gradually less, can hardly be regarded with much favour by its owner. It is not a little remarkable that this neglect of the natural grasses should be so common, since the means of their improvement, either by draining or by top-dressings, have been so well demonstrated. Our friend, Mr. R. Smith, in his valuable prize essay on the management of grass land (Jour. R. A. Soc., vol. ix, p. 1), alludes to some of these things pretty correctly when he remarks that, "while every agricultural publication teems with information of every order for the advancement of the arable department, we rarely meet with the record of a single experiment for the improvement of grass lands, although it is well understood that this branch of agriculture is expected to furnish the majority of the supplies of both beef and mutton, during the summer months. Moreover, seeing that the main skill and enterprise of the agricultural order are particularly directed to the united production of cattle, sheep, and corn, by the adoption of the 'alternate husbandry,' (and in many instances regardless of the old grass lands), the theorist is led to dwell upon the apparent working of the subject, and to draw the conclusion that the arable land must be more grateful for the extra labour, and artificial aid supplied, and consequently the quickest and most certain in its return. This, it is important to remark, is daily confirmed in practice; for it is found that the majority of occupiers endeavour to increase their arable lands by obtaining permission to break up a portion of their grass lands, though it is a novelty to find them laying down arable lands to permanent pasture. Hence it happens that a large proportion of the grass lands of England remains unimproved, and in many instances neglected, particularly in those districts where there is an over-abundance of grass land in proportion to the arable, which occurs in some districts to an enormous extent."

Such are the remarks of an eminent grazier, and it is pretty certain that they are based on a correct foundation. I propose then, in examining a portion only of the difficulties which such occupiers have to encounter, to address myself in this paper to the consideration of some of the various top dressings for grass, which are well adapted to the improvement of many of the poor grass lands like those to which I have referred.

In the consideration of the causes which lead to the impoverishment of a soil, we can rarely proceed by a more certain road than by first inquiring what the crops with which it is tenanted abstract from the soil. Now in the case of the grasses, we have, in a recent paper by Professor Way (ibid, p. 140), an analysis of two of the ordinary pasture grasses, by which we find that every ton of the hay of white clover and of rye-grass removes from the soil the following inorganic ingredients, in lbs. and tenths of lbs.

	White clover.	Rye grass.
Silica	6.3	75.5
Phosphoric acid	19.9	7.8
Sulphuric acid	12.4	1.6
Lime	45.5	15.3
Magnesia	14.0	3.3
Per-oxide of iron	3.4	0.4
Potash	24.7	13.4
Soda	6.4	0.2
Common salt	8.7	6.9
	141.1	124.4

The farmer will notice from the result of this analysis how large a proportion of the salts of lime is assimilated by the clover. Now as I have elsewhere had occasion to remark, when speaking of some of the native salts of lime, with which so many agricultural districts are enriched, from many carefully conducted trials on soils of varying quality, I have been long since led to the conclusion that there are no fertilisers to be so generally relied upon for the improvement grass land, as those which contain the salts of lime, including in this list the carbonate (chalk), phosphate (bone earth), and sulphate (gypsum). Almost every manure, in fact, which has been proved to be generally powerful in the production of grass, contains one or more of these salts. Night soil, for instance, which is so prized by the farmers surrounding the metropolis, as a top dressing for their pastures and hay fields, is peculiarly rich in the phosphate of lime. Crushed bones contains from 40 to 50 per cent. of it. Now

every farmer of the county of Chester is well aware that there is hardly any manure so powerful, and so durable in its effects upon grass lands, as crushed bones. Of this extended durability we have the evidence of Mr. Edward Billyse, of Nantwich (ibid, vol. 2, p. 91); and I have before me a letter from the same gentleman, in which he remarks, in alluding to the Cheshire custom for the landlord to supply the bones—

"When the landlord furnishes the bones, the land manured with them ought not to be mown after the first year. The bones which the landlord supplies his tenant with for his pasture land are expected to retain their fertilising powers for upwards of 20 years! and reckoning the money so expended at four per cent., and the interest charged to the tenant seven per cent., the landlord gets his principal paid back in about 21½ years; and his land will then, I may venture to say, be 20 per cent. better than when the bones were first applied. But this would not be the case if the land was mown; eight or nine crops of hay would exhaust the bones, and it would not, therefore, answer to the landlord to furnish them for mowing lands excepting at such a rate of interest as would pay him back his capital in eight years; and I should not advise it then, for in the event of the tenant quitting the farm after having taken five or six crops of hay, it would be hard upon the new tenant to have to pay the same for the last two or three crops. It is when the tenant pays for the bones that I recommend them for mowing lands. The reason I give for advising that no stock should be allowed to feed upon the land the year bones are applied is, that the bones may get in well and soon, as they do little or no good so long as they remain above ground. On the very poor lands, hard stocked, they will not all disappear for two or three years. If the bones are applied at the end of April, and the land is not too poor to produce a crop of hay, I would mow it the first year; and if applied at the end of August, or at the latest at the beginning of September, then put no stock on the land the following spring. The grasses I should recommend to seed land down with, that is intended for bones, are the following: —Dutch clover-seed 5lb., rib-grass seed 5lb., meadow fescue 5lbs., sweet vernal 3lbs., and perennial rye-grass 1 peck to the statute acre. These are the grasses which the Cheshire pastures are chiefly composed of. Our principal stock are dairy cows."

The very common effect of the application of any fertiliser which abounds with the phosphate of lime is to induce the apparently spontaneous growth of the wild white or Dutch clover. Every farmer of Cheshire is aware of this phenomenon, and most persons have noted the same result on the sites of places where wood or other vegetable fires have taken place, and for pretty certainly the same reason, that wood ashes contain a very considerable proportion of the phosphate of lime.

In other cases the cultivator may have access to peat or peat ashes, and here we have another mineral top dressing for grass of long recognized powers; a value which is attributable entirely to the presence of the phosphate and sulphate of lime. In Holland the use of these "Dutch ashes" is very extensive, and in the Vale of Kennet "the Berkshire peat ashes" are equally celebrated. They are there preferred on many soils to even farm-yard manure as a top dressing for grass. I have noted in Berkshire the same result in the production of white clover, as from the Cheshire bones. It is certain, too, that the peat ashes of other districts (especially those resting on a calcareous substratum) also are rich in the same salts of lime. Of this we have an instance in the case of some peat ashes from the Isle of Lewes, recently analyzed by Professor Johnston (Trans. High. Soc. 1848, p. 235). Two specimens were examined; they were from the peat procured from drained and undrained land. Both samples, we are informed by the Professor, were light in colour, but that prepared from the drained peat was of a browner shade, indicating the presence of a larger proportion of iron. They contained in 100 parts—

	Drained.	Undrained.
Common salt	0.41	0.29
Phosphate of lime	2.46	6.51
Sulphate of lime	28.66	16.85
Sulphate of magnesia	1.68	2.01
Magnesia, Potash and soda, Alumina — in state of silicate and carbonate	6.32 / 5.32 / 11.63	5.86 / 3.59 / 7.54
Oxide of iron	9.18	6.58
Silica soluble in caustic potash	15.55	28.58
Insoluble siliceous matter and sand	7.94	14.20
Carbonic acid, charcoal, and loss	10.85	7.99

Of these two peat ashes, the same enlightened chemist remarks (and these observations may be equally well applied to many other neglected specimens)—"The proportion of phosphate of lime in both these ashes is large—in the one 2½, in the other 6½ per cent. This taken in connection with the large proportion of gypsum, shows that these ashes are very valuable as fertilizing applications, either to peaty or other soils. That the proportion of phosphate is greater in the undrained peat is probably owing to the sample that was burned consisting of the more recent remains of those vegetables from which the peat is produced, than that which has been some time drained, and therefore more exposed to those atmospheric and other influences by which decay and dissipation are promoted. In top-dressing their pastures with any of the substances to which I have alluded, the owner

must not forget that the experience of those who have long used crushed bones is in favour of applying them in moist weather, when the ground is in such a state as to admit of their being, by means of a heavy roller, well pressed into the soil. On this Mr. W. Lewis, of Trentham, in Staffordshire, speaks with the greatest confidence. He remarks (The Fertilizers, p. 162), "I have applied bones to pastures, and they have generally improved very greatly the herbage and the verdure. The top dressing I would recommend to be done in moist weather, when the ground is pretty well covered with grass. I consider from one and a half to two tons per acre to be a fair dressing. After sowing the crushed bones, the ground should be well bush-harrowed length and breadthways, then heavily rolled, and all stock taken from the field for at least ten days. I have seen bones applied to bare pastures with little or no covering, done in hot dry weather, showing no beneficial effect whatever afterwards. It is evident, in fact, that the roots of the grasses must be brought into immediate contact with the decomposing bones before they can absorb and assimilate any of their constituents. Bones, too, lose very considerably in weight by exposure to the atmosphere—green bones one-fifth of their weight; and even the boiled bones of the size makers, which are so extensively used on the Cheshire pastures, lose, under similar circumstances, one-third. In the case, too, of the sulphate of lime (gypsum), the time and mode of application are very material circumstances to be taken into consideration; moist weather is best for the development of its powers. "I never," says an excellent Hampshire farmer (Mr. J. Barnard, of Little Bordean), "put on gypsum before the last week in April, or the first in May, and choose, if possible, a moist morning. I can see the effect on sainfoin (2½ cwt. per acre) on a clayey soil." In using common salt, or soot, or guano, for the same purpose, moist weather should, if possible, be always selected; for a little reflection will readily convince us that what remains in the state of a dry powder on the surface of the land can hardly exert any immediate influence upon the grasses with which the soil is tenanted.

In thus taking advantage of this period of the year to offer these remarks (since on many grass soils the dressings are now applied with very considerable advantage), I have restricted my remarks to those fertilizers whose chief value consists in their furnishing some of the mineral constituents of the plant; and I have done so from the conviction that they are, of all others, the most permanent in their effects. It is true that no farmer doubts the value, for such a purpose, of the manure of the farm-yard, or of the manure of cake-fed stock; and I have seen, in the case of old pastures, very great improvements made by a systematic partial feeding of the stock depastured on them with oil-cake. Yet still we must not forget that even in the oil-cake thus employed, a considerable portion of the salts of lime is conveyed in the excreta of the animal to the soil. English oil-cake when burned affords about 7½ per cent. of ashes. Now these ashes according to the analysis of Professor Johnston (Trans. High. Soc. 1846, p. 203), contain, per cent.—

Alkaline salts	31.55
Phosphates of lime and magnesia	47.67
Lime	4.88
Magnesia	1.51
Silica	10.81
Sand	3.86

The farmer, therefore, who adds cake to the food of his pasture-feeding live stock, in this way adds to his land 3 or 4 lbs. of the earthy phosphates in every 100lbs. of the oil-cake thus consumed. We may safely conclude then, that the explanation of the admitted advantages of employing oilcake in this way, is to be found, not so much in the greater riches of the dung of the animals thus fed, in organic matters, as in the largely increased presence of the phosphates and other saline ingredients of the oil-cake —salts which, the accomplished English farmer is well aware, may be commonly procured for manure in a much more economical manner than by the employment of oil-cake.

DARLINGTON FARMERS' CLUB.

The August meeting of this club was held on Monday, the 7th inst., in the offices of Mr. Dixon, land agent, Darlington, on which occasion Mr. Johnson occupied the chair. The subject for discussion, "The harvesting of wheat and other grain crops, with the comparative advantages of mowing and sickle reaping," was proposed by Mr. Trotter. He observed that he was quite convinced that cutting wheat by the sickle was the best method; and then, as was customary in this country, as soon as it was cut to stook it up, and hood the stooks properly; and in order to do this to the best advantage, there should only be ten sheaves in each stook. As regarded barley, oats, and beans, he was in the habit of cutting them generally by the scythe, when the crop was not too heavy; last year, however, on visiting a friend at some distance, he found him having all his oats and barley cut by the

scythe, if even the crops were heavy and lodged; but the real fact was, that in this part of the country he believed we had not so good a method of mowing as his friend's men had: in heavy and lodged crops they mowed it all against the corn with a scythe and a bow, and made good work. Under all ordinary circumstances he would therefore say that he considered mowing of oats, barley, and beans preferable to sickle-reaping.

Mr. DIXON observed that he did not think that the observations of Mr. Trotter embraced the whole question according to the subject named on the card which was issued. He would, therefore, read a memorandum which he had made that morning, containing his view of the matter, and relative to the proper time of reaping. He then read the following interesting paper:—

"In 'the harvesting of wheat and other grain crops, with the comparative advantage of mowing and sickle-reaping' there are several circumstances in connection which claim consideration. In the first place, there is to be considered the proper time for reaping, as regards the requisite degree of ripeness; then the best mode of winning or drying the crop, by proper stooking, or otherwise, in order to get it into a proper state for stacking to the greatest advantage in the least time. There is also the question as to which is most advantageous and least expensive, mowing or reaping by the sickle; both as regards winning, stacking, thrashing, and dressing. And, likewise, it is worthy of a consideration as to which mode is most beneficial or otherwise to the land producing such crop. First, as regards the proper time for reaping as to ripeness of the grain. In the wheat crop, my opinion is, that it should be cut a little before it is full ripe, just when it first turns yellow, or rather is turning from green to yellow, and is in the state which we term raw or rear. Upon the cold clay lands at this time there are generally portions of the crop in and near the furrows which are rather green; but still if the straw is ripe from the bottom, and has at that time turned yellow above the ground, up to the place where it is cut by the scythe or sickle, then the sap remaining will rise up the straw, and feed the ear quite as well as if it were altogether yellow. Besides, if the crop were allowed to stand on these kinds of lands until yellow in all parts of the furrows, then on the ridges it would be too ripe. There are different reasons why the wheat crop should not remain uncut till full ripe. In the first place, wheat that stands until full ripe is more easily affected by wet weather; it sprouts much sooner in the stook in a rainy season than what it does if cut raw. In the sample of a crop of wheat where part is cut full ripe and part cut raw, it will be found that the part cut raw will be a brighter, plumper, and more beautiful looking sample, and will also weigh heavier; whilst of the part cut full ripe, the sample will be browner, thicker skinned, and will weigh rather less. In the reaping, whether mown or cut by the sickle, the part cut rather raw will take up incomparably cleaner, and with less waste, than if full ripe. A few years ago Mr. Hannam, of North Deighton, near Wetherby, made a series of experiments as to the proper time of reaping wheat, which were very conclusive as to the advantage of cutting it before full ripe. One part which was cut raw on the 26th of August, and stacked on the 5th of September, gave a return of £14 18s. per acre. Another part reaped not quite so raw on the 30th of August, and stacked on the 9th September, gave a return of £14 17s. 4d.; while the part cut ripe on the 9th of September, and stacked on the 16th, gave a return of £13 11s. 8d. per acre only, being a loss of £1 6s. 4d. as compared with the part cut raw. The straw was also of much better quality on the part cut raw. In the harvesting of oats, also, it is well to guard against having the crop too ripe before reaping, as there is in this case a waste in reaping and winning, and the straw is also deteriorated in quality. In the harvesting of barley, however, the case is somewhat different, for, in order to have the quality good for malting purposes, it is necessary to have the crop fully and evenly ripe. It also requires a longer time to dry and win properly than wheat, and also close attention in the winning. As regards the comparative merits of mowing and reaping with the sickle, much must depend whether the crop be heavy or light, lodged or standing. In reaping the barley and oat crops I think the scythe preferable to the sickle in all ordinary cases, because the crop can be done for less cost, and I believe it also is ready for stacking in about one-fourth less time. There are frequently other advantages besides those which I have already named as to mowing grain crops. In a farm establishment it frequently happens that it may be convenient to have a field mown when it is inconvenient to spare hands to bind and stook it up on the same day; and if the weather be suitable, perhaps it may be an advantage in the winning. In some establishments also there are hands who are not good sickle reapers, but who are, perhaps, good hands at mowing, gathering, and dressing up a crop after the scythe. In the wheat crop, however, I am not quite so certain if mowing will generally answer so good a purpose as sickle reaping; and I think there are some rather formidable objections against it. If the crop be heavy, I believe it can be reaped with the sickle very nearly at the same expense, besides being more neatly accomplished; or, in cases where the crop is thin and light, it cannot be done so neatly, without raking, as it can with the sickle.

Besides, there is another question arises, but more particularly on thin land, as to the effects on the land, and which appears to me to be a question of some importance. I have at different times observed that where part of the field has been mown, and another part of the same field cut by the sickle, that in the succeeding crop there has been a great deficiency of produce on the part of the field on which the wheat crop had been mown, as compared with the part cut by the sickle, perhaps to the extent of five bushels per acre. This could only arise from the part mown being cut much nearer the ground, than the part reaped by the sickle. I cannot explain why it was so; whether it was in consequence of the land reaped by the sickle having considerably more stubble upon it, it had a beneficial effect through the autumn and early part of the winter in keeping the land warm, mellow, or in preventing the escape of ammonia; or whether the lower part of the straw or stubble contains a considerable quantity of organic matter which is beneficial to the succeeding crop, I cannot tell; but, from observation, I am enabled to say that such is the fact upon clay lands.

Some discussion then took place, in which Mr. Mewburn, Mr. Clarkson, Mr. Johnson, Mr. Trotter, and Mr. Dixon, took a prominent part relative to the comparative advantages of mowing and sickle reaping. Mr. Clarkson observed that by mowing the crop was got up at half the expense of sickle reaping, and in fact he would not have a sickle put into his farm on any consideration. By mowing it, he got all into the fold, and lost nothing by gleaners.

Mr. Trotter observed that when wheat was mown, there were often complaints made by the millers, of pieces of soil being amongst the corn.

Mr. Mewburn said that he was very much struck with the remark made by Mr. Trotter, that the millers complained that in the wheat which was mown there was too much of earthy matter, that had got mixed with the corn in the thrashing. That, he said, must have arisen from the corn lying longer upon the ground; or it might have arisen from a shower of rain after it had been mown; for, as a matter of course, in that case the ears of corn next the earth would get saturated. He would also like to know if the millers ever made the same complaint about corn that had been shorn with the sickle?

Mr. Trotter, in reply, said no such complaint had ever been made that he was aware of.

Mr. Dixon explained that in light crops of wheat, the straw was sometimes a little broken down and ruffled, and in moving a crop it frequently happened that the cradle teeth got hold of some of the straws and ears before the scythe had an opportunity of cutting them; and the consequence was, that those stems were pulled up by the roots; and in being so pulled up, a portion of the soil adhered to the roots, which in the operation of thrashing and dressing, a part of such soil got intimately mixed with the grain, and thus arose the evil complained of.

Mr. Johnson said that the greatest objection to mowing in this part of the country was, that we had not people who knew how to mow well.

Mr. Clarkson calculated that where it costs 4s. 6d. to mow corn, it costs 9s. 6d. to have it shorn by the sickle. He would not have his wheat cut by the sickle if he could get it cut for nothing by that means.

Mr. Mewburn suggested that Mr. Dixon should write to some of the large farmers in Lincolnshire and Holderness, to obtain some information as to the advantages of mowing and scything. If it was a benefit in those places, it must be a benefit here; and if there was a benefit connected with it, he thought the farmer was exceedingly to blame who did not avail himself of it.

The meeting then dissolved.

HINTS FOR HARVEST.

The effect of the weather upon the crops continues to engross public attention, and will induce commercial men to operate very cautiously, and to limit the extent of their transactions until the result shall have been ascertained. We believe there never has been a season in which, with all the appearance of generally unsettled weather, the rain has been so partial; and hence more wheat has been got into stack than may be imagined. There was very heavy and incessant rain in Cheshire, parts of Lancashire, and Staffordshire, with every appearance of extending over that part of the kingdom, from seven o'clock in the morning until eleven on Saturday: but little fell at Rugby, and in the afternoon, between Wolverton and London, the teams were at work carrying wheat, oats, and clover hay. The greatest part of the wheat crop from Stafford to London, so far as the eye can reach in travelling by railway, is secured, although doubtless much of it in such indifferent condition as will require to be many months in stack before it will be fit for use. We are much surprised that in a season like the present

the plan of *wind-mowing* corn, as practised in the west of England, is not more generally adopted. The term *wind-mowing* means putting up in mows or stacks for the wind to blow through them. This process is well described by Mr. Impey, of Street, near Glastonbury, Somersetshire, in whose neighbourhood it is very generally practised. He says—

"Wind-mowing is a plan which is always adopted on the Mendip Hill, near this place, where the harvest is always late and damp. As soon as the tops of the sheaves are dry, and the body of the sheaf tolerably so, but not enough so to put in a stack or mow, they carry together about a waggon load to one place, and commence by laying three or four sheaves across each other in such a manner that the butts shall only touch the ground, which forms the centre of the bottom; then you lay sheaves all round the butts, the ears all rising upwards and meeting in the middle on those first laid; this is continued until ten or fifteen feet high, when you make a very large sheaf and turn upside down on the top, spreading the ears all round, and if it rains a month it will not hurt it. They sometimes remain thus for several months here, but then they substitute a bundle of reeds for the large sheaf on the top, and should fine weather set in before all is done, that which is not done is hauled first, and the windmows being safe, are left till a more leisure time. They have not only the advantage of being safe from wet, but being only two sheaves in diameter, the air draws through and effectually dries it when settled weather comes, as every butt is outside in the air."

When the corn is thoroughly ripe, if cut when the straw is dry, it may be immediately put up into these small mows. This system possesses the great advantage, that if the corn has stood but a short time in stook, say 12 or 24 hours, if rain threatens, it may be put into wind-mows with perfect safety when it is not fit to be carried into stacks even of a moderate size. It is surprising how rapidly corn may be secured in this manner. We have frequently seen, when a change of weather threatened, all hands turned to wind-mowing, and a field of 20 acres secured in a couple of hours. The cost is trifling, as the reapers will undertake it for 1s. or 1s. 6d. per acre. It used to be the general practice with those farmers who intend to thrash wheat immediately, and when the weather was not sufficiently hot to make the grain hard. A few weeks in wind-mow, if any portion of the weather be dry and windy, will make the grain quite hard. We have frequently seen these mows made in straight lines through the field, the land ploughed between them, and a good plant of stubble turnips growing before the mows were removed. Tens of thousands of acres of corn, in the hilly and late districts, are thus saved in good condition, which would otherwise be much deteriorated or destroyed. The practice of cap-stitching is also extremely useful, but by no means generally adopted. Mr. Impey thus describes it—

"After a stitch or trave, as I believe you call it, is set up, a number of sheaves are tied rather nearer the butt than usual, and turned butts upwards on the top of the stitch, so that half the sheaf hangs ears downwards on each side of the stitch, and by being placed close together all along, it effectually prevents the wet from getting to the heads of the under sheaves, and from the top ears hanging downwards the wet runs off without damaging the corn. After having some wheat out about two weeks in the wet, I thought of this plan, of which I had heard, but never saw carried out; though very wet weather followed, my wheat was dry enough to mow in four days after. Whilst we were about the mowing a heavy storm came on, which compelled every one else to leave off; but when I took off my cap sheaves I found only the very butts of the under ones wet, which, for '*wind-mowing*' is of no consequence."

We recommend the practice of *wind-mowing*, from practical experience in the growth of from two to three hundred acres of corn annually. A correspondent at Winchester, who signs himself J. B., and whose letter will be found elsewhere, calls attention to the practice as being adopted in Ireland, and originating, no doubt, in the well-known humidity of that country. We would, however, caution our readers against adopting the Irish mode as generally practised—at least, so far as we have seen it—inasmuch as the wind-mows are made very small, only as high as a man can reach; whereas the mow, as set up in the west of England, is made by a man kneeling on the sheaves and who keeps upon the mow until it has attained the required height, gradually drawing it into a point after it reaches seven or eight feet high. There are no sheaves put in the middle; the ears of the corn all meet; and great care is taken that the upper ends of the sheaves or ears shall be considerably above the ends or butts, so that there is a fall from the centre of the circle or heads of the sheaves to the outside of the mow—that is, to the butts—equal to that of the roof of a flat lean-to shed, by which means no rain can beat or run into the mow. —Mark Lane Express.

LONDON FARMERS' CLUB.

WEDNESDAY, AUG. 16.

Meeting of the Committee appointed "to inquire into the present destructive ravages of the Small-pox in Sheep, and to suggest such steps as they may think best to prevent the extension of the disease."

Present: W. Fisher Hobbs, Esq., Capt. Aicheson, Wm. Shaw, Esq. (London).

W. Fisher Hobbs, Esq., in the chair.

The chairman called the attention of the meeting to two bills lately introduced into the House of Commons for carrying out the objects the committee had in view.

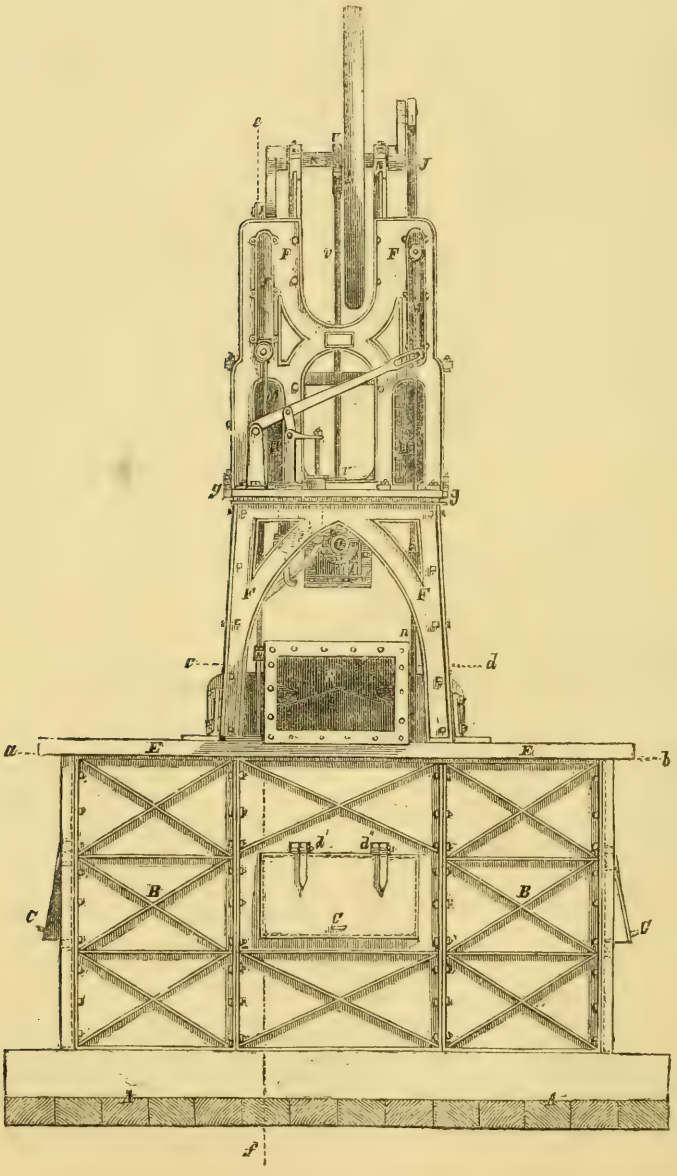
The proposed bills were then examined, and the first—for preventing the further importation of foreign cattle—deemed fully sufficient for that purpose. The second, however, which aimed at staying the spread of the disease in this country, did not, in the opinion of the committee, go far enough. As, while it prohibited the exposure of infected animals at markets, still it did not prevent their being travelled or fed on the highways, common roads, or common lands—practices that, if permitted to continue, were calculated greatly to extend the disease.

Some suggested additions in accordance with the above were then drawn up and agreed to, and the chairman requested to present them to the introducer of the bill, Mr. Labouchere, with whom Mr. Hobbs accordingly had an interview the same evening.

WALKER'S PATENT HYDRAULIC ENGINE.

(FROM THE MECHANICS' MAGAZINE.)

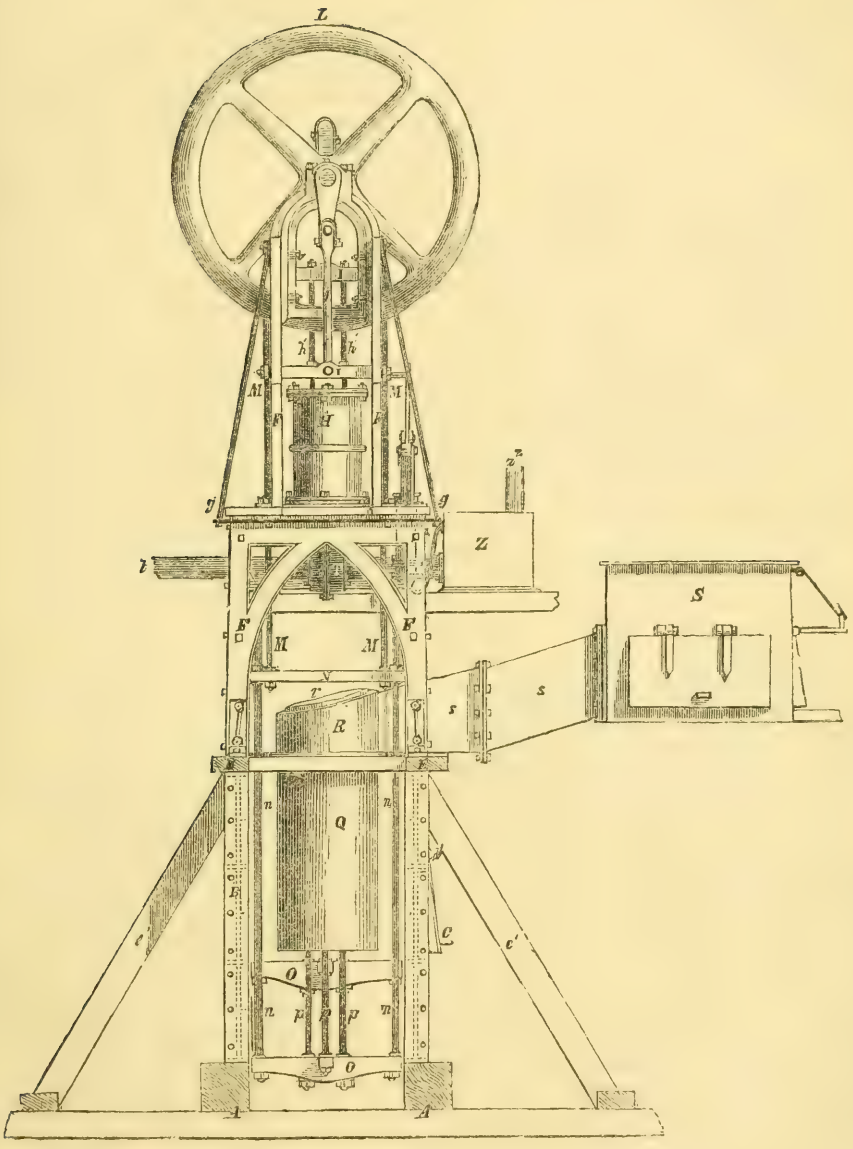
FIG. 1.



We recently made favourable mention (No. 1301, p. 53) of a new hydraulic engine of extraordinary power which we had seen at work on the premises of Mr. Walker, the inventor, and which has been constructed by him for the drainage of some marsh lands in Norfolk. We now extract from Mr. Walker's specification the following complete description of the engine:—

"Fig. 1 is a front elevation of the engine; fig. 2 is a side elevation; fig. 3, a sectional side elevation on

Fig. 2.



the line *e*, *f*, of fig. 1. A A is a foundation of strong planks, supporting a quadrangular cast-iron well, B, B, which is sunk into the ground to such a depth as may be necessary for the purpose required. The well, B B, has three openings, *c c c*, one in front, and one on each side, fitted with sluice doors hinged on their upper hedges at *d' d'*, one or more of which can be opened or closed at pleasure. On the upper flange of the well, B B, rests a strong frame of timber, E E, from which stays, *e' e'*, pass down to the foundation timbers, and give stability to the superstructure. Upon the frame, E E, are erected cast-iron framed standards, F F, secured to the well, B B, by nuts and bolts passing through the frame, E E. The standards, F F, are in two heights, and upon a flooring at *g g*, there are two steam cylinders, H H, with pistons, each of which is connected by two piston-rods, *h h*, to its respec-

tive cross-head I. From a bolt in the centre of the cross-head, I, which works in guides in the side framing of the standards (not shown in the figures) a connecting-rod, J, passes up to a crank on the outer end of the shaft, K, which shaft carries a fly-wheel, L. From the outer ends of the cross-head I, two connecting-rods, M M, pass down to a large cross-head, N N, beneath the steam cylinders; from this cross-head two other rods, *n n*, pass down, and are bolted to a cruciform platform, *o o*. Upon the platform, *o o*, are bolted four upright iron rods, *p p p p*, the upper extremities of which support a valved piston, P, hereinafter more fully explained. Immediately beneath the steam cylinders, and supported by their upper flanges, upon the frame, E E, are two water cylinders, Q Q, open at the bottom, and having at top a valve, opening upward. This valve is similar in its construction to those in the pistons afterwards described. Upon the upper flanges of the water cylinders, Q, is bolted a valve-box, R, communicating by an exit-main, *s*, with what I term a dividing box, S, furnished like the well B, before described with doors on each side, and in front capable of being opened and closed at pleasure. On the top of the valve-box are covering plates, *r r*, the removal of which gives access to the cylinder valves. Steam from a boiler is admitted through the induction-pipe *t*, to a slide-valve T, placed beneath and between the steam cylinders, by means of which the steam is admitted alternately to the bottom of each. The slide-valve, T, is worked by an eccentric V, on the crank-shaft K, through the medium of the rod *v*. The steam cylinders, H, are fitted with cones through which the piston-rods, *h*, work; the hot air passing from the upper part of one to the other through the air-tube, *w*, as the pistons alternately rise and fall. After leaving the cylinders the waste steam passes from the slide-valve, T, along the eduction-pipe, *z*, through the water-box, Z, whence it passes into the pipe, z^2, which may be led into a chimney or other convenient outlet. The cold water raised by the pump, b^2, flows into the upper part of the water-box, Z, and into the tubes which descend nearly to the bottom thereof, where it becomes heated (by the spent steam passing through the box,) nearly, or quite to the boiling point, in which state it is forced into the boiler by the feed-pump, a^2.

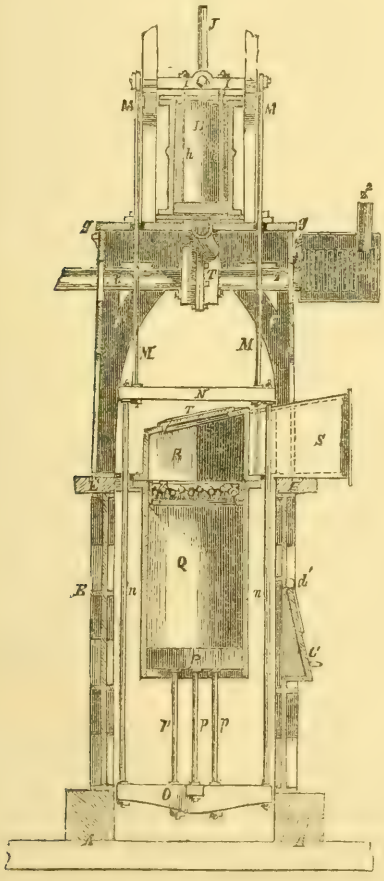
"Figures 4 and 5 are enlarged representations of the piston and valves; fig. 4 being a plan, and fig. 5 a sectional elevation thereof. This valve consists of a number of cast-iron bars, forming a sort of grating, strengthened on the underside with cross-bars, and having bosses to receive the screwed ends of the supporting-rods, *p p*. The upper surfaces of the bars are ranged in pairs on two alternate levels, the edges of the openings being formed into circular seatings, in which are laid lengths of iron tubing plugged with wood, which close the openings between the bars, and form a water-tight joint in a downward direction, but open freely upward. To keep the lengths of tubes in their places endways, a deep wrought-iron band, or ring, e^2 e^2, is shrunk round the valve, while two bridges, *f f*, retain the tubes vertically, and limit their range of action. The bars between the openings are wedge-shaped on their under surfaces, so as to offer the smallest possible resistance to the ascending column of water. The wrought-iron band, e^2, of the piston valve is turned true on its external surface, so as to move freely up and down on the cylinders, but does not require any packing.

"I will now endeavour briefly to describe the mode of operation. The steam in a boiler being at a pressure of twenty-five pounds, or thereabouts upon the square-inch, is admitted to the slide-valve, T, through which it passes into one of the steam cylinders beneath the piston that happens to be in the position for making the upward stroke. The pressure of the steam raises the piston which, by means of the piston-rods, *h h*, cross heads, I and N, and connecting-rods, M M and *n n*, already described, lifts the valved piston, P, and expels any air or water that may be above it, through the valve at the top of the cylinder, Q. The opposite steam and water pistons at the same time descend by virtue of their connection with the crank-shaft, *k*; the air, or steam, beneath the steam piston, escaping through the eduction port to the waste-steam pipe. On completing the stroke, the movement of the slide-valve reverses the ports and admits the steam into the other cylinder, the piston of which is in like manner raised, and the water that is now above the second piston, P, is thrown forcibly upward through the valve at the top of the cylinder, and passes off by the exit-main, *s*, to the dividing-box, S; by this movement an ascending current of water is generated in the cylinder, and when the motion of the piston P is reversed, and it begins to descend, its valves open, and the upper current of water, generated as before described, passes through the valve until the piston P has traversed a greater or smaller portion of its downward stroke, according to the momentum acquired by the water, which will be in proportion to the velocity with which the piston travels.

"When the engine is employed for draining land, one or more of the sluice doors, *c*, are opened, communicating with the drains from which the water is to be taken. The side doors of the dividing-box, S, are closed, and the front are opened, communicating with the channel by which the water is to be got rid of. On the contrary, if water is to be raised from a river or other external source, and thrown

into the ditches for irrigation or other purposes, the sluice-door, *c*, of the well, B, communicating with the river is opened, and those communicating with the drains shut. The front sluice of the dividing-box, S, is also shut, and the side, ones leading to the drains or ditches opened. By thus regulating the sluices the engine can be employed to lift water out from or into the land at pleasure. In erecting this machine, it is to be observed, that the lower orifice of the water-cylinder, Q, should not be higher than the lowest part of the drain from which the water is to be taken, as the machine ceases to raise the water when it falls below the bottom of the cylinder.

Fig. 3.



"Pneumatic machines for forcing air, for blowing furnaces, or any other purpose where a blast of air is required, may be constructed in the same manner as the hydraulic machine before described; only that in pneumatic machines the cast-iron well, B, and the dividing-box, S, are unnecessary; the former being replaced by a suitable frame-work of wood, masonry, or metal, and the exit-main carried direct from the valve-box, R, to the place where the blast is required. For pneumatic machines, I also prefer to construct the valves with tubes of gutta percha, or other elastic material, enclosing metal rods or tubes to give the necessary weight and strength thereto, in lieu of the plugged iron tubes before described.

Fig. 4.

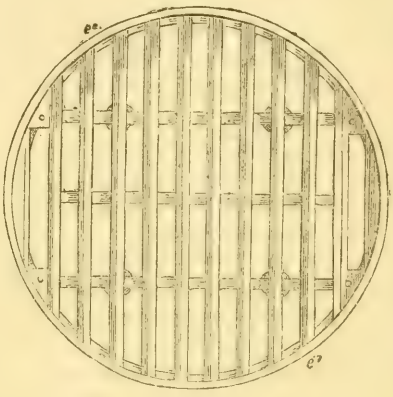
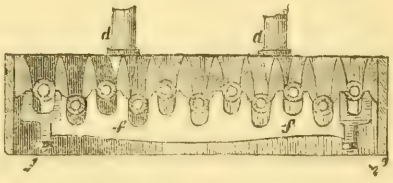


Fig. 5.



"Pneumatic machines for exhausting air may also be constructed on the same principle, in which case the cylinders, Q, and valve-box, R, are inverted, the open end of the cylinders being placed upwards. The valve opening upward is placed at the bottom of the cylinder, and that which was the exit-main of the forcing machine, now becomes the suction or exhaust pipe. The connecting rods, *n n*, from the cross-head, N, pass down withinside the cylinders, Q, and are attached directly to the upper part of the piston, P. In working hydraulic machines for raising water, I have found seventy revolutions of the crank-shaft per minute to be an advantageous speed; but in pneumatic machines for forcing or exhausting air, I prefer a greater speed, say from one hundred to one hundred and fifty revolutions per minute. For working hydraulic or pneumatic machines where a steam engine is not employed, I use a winch for the application of manual power, or a vertical shaft to be turned by cattle, connecting the same by suitable gearing (as is well understood by engineers), with a crank from which a connecting-

rod descends to the cross-head, N, which works the piston in the manner before described."

We intended to have added to this description a statement of some of the actual performances of this engine, and to have deduced therefrom an argument for its peculiar applicability to purposes of drainage and irrigation; but we find this part of our task so well done to our hands, in the following able letter from a correspondent, that we need but insert it as it has reached us; remarking only, that while the latter itself sufficiently attests the intelligence and experience of the writer, we have every reason to confide implicitly in his disinterestedness and impartiality.

"Sir,—As a person who has been for many years engaged in the drainage and irrigation of lands in both Indies, perhaps you will allow me space in your highly esteemed Magazine, in order that I may express my opinion as to the merits of *Walker's Hydraulic Engine*, or *Patent Elevator*, to which I would wish, very particularly, to draw attention.

"I consider it very essential that the present machine should not be confounded with *that* which Mr. Walker brought before the public some few years ago;* as the many modifications and improvements recently effected constitute it an entirely different affair. As it now stands, it is simply a *lifting-pump*, extremely similar in outline to the ancient lifting pump used in France (during the reign of Henry IV.) by Lintlaer, at Pont Neuf, to supply the Louvre with water from the river Seine; and subsequently by the Dutch engineer, Rannequin, in 1682, in the celebrated water-works at Marli, near Paris; but its very simplicity, combined with the sound principles on which the valves are constructed, and the economical method of applying the power of the steam-engine, *together*, render it the most perfect hydraulic machine ever invented.

"The steam-engine itself is exceedingly simple, and judiciously planned; working each time I have seen it at a pressure of 18 lbs. to the square inch. The steam boiler is about 12 feet long, with a tube in the centre; and with this small boiler the engine now erected at Mr. Walker's factory (Oliver's yard, City-road,) may any day be seen delivering about 7000 gallons a minute 4½ feet high; to which height it is restricted by its local position. This engine is intended for the drainage of an estate of 500 acres in Norfolk; and, when it leaves the factory, will have two steam boilers (of about 15 feet by 3½ each), capable of working the engine (at a pressure of 35 lbs. to the inch), so as to discharge 6000 gallons of water a minute, or 4,320,000 gallons a day *ten feet high!*

"The cost of this hydraulic machine, entirely complete, is only about £600 or £650; whilst its working expenses may be estimated at 12s. 6d. a day of twelve hours, including coal and attendance! For this sum the agriculturists may drain his land of 4,320,000 gallons of water, which is very nearly equivalent to a fall of rain of *one inch to the square foot* over 200 acres of land; or he may in dry seasons give to his land that amount of water as irrigation.

"How many times do we hear the farmers of England and the sugar-planters of the Indies, (especially the latter,) calling out anxiously and despondingly for a shower of rain to save their crops from partial or entire destruction! And how frequently do we hear them exclaim, on the occurrence of a seasonable shower, "Ah, this fine rain is worth £1000 to my property!" We have all heard this exclamation, and know full well how strictly true it is. Must we not rejoice then, when we know that such a machine as Mr. Walker's will afford out agriculturists of this country and the colonies sufficient water for the irrigation of 200 acres for 12s. 6d. when the elevation is not above 10 feet, or a trifle more when the height is greater! Those requiring a lift of 38 or 40 feet can be accommodated just as readily as those who want only 10 feet; the difference being not more than £100 to £150 in the first cost of the engine, and a proportionate quantity of fuel. In fact, these engines can be made to discharge 20,000 or even 50,000 gallons of water a minute, merely by enlarging the cylinders and increasing the extent of the steam power. They afford the agriculturist the means of drainage and irrigation immeasurably beyond any other description of hydraulic machine, whether pump or otherwise; whilst, at the same time, the benefit derivable from their use is not confined to agriculturists alone, but extends to all cases wherein pumps are now used.

"Being greatly interested in these matters, particularly in relation to agriculture, I was invited by Mr. Walker to inspect his engine, and witness its performance, which I have done twice; and after the most careful investigation of its principles, and a strict observance of its work, I feel so entirely convinced of its great value, that I cannot but recommend it most heartily to every one whose business is in any way connected with hydraulics; and I say to all such, lose no time in seeing for yourselves this most valuable invention.

"I remain, Sir, yours, &c.,

"W.

"*July* 25, 1848."

* See *Mech. Mag.*, vol. xxxvi., p. 209.

BREACH OF COVENANT UNDER A FARMING LEASE.

ELLMAN *v.* HIPWELL.

The proceedings in this case commenced at twelve o'clock on Tuesday, the 18th July, before Michael Prendergast, Esq., at the Swan Hotel, Bedford, and continued on Wednesday, when the further inquiry was adjourned until Tuesday the 8th August, and lasted until Monday the 14th.

The examination of witnesses was commenced by Mr. Palmer, solicitor to the plaintiff.

Mr. Goodman, land agent and valuer, residing at West Cherrington, in Northumberland, valued the farm in 1819; and it was let to Mr. Hipwell at £525 per annum, in consideration that the defendant was to put the roads in good order. He went to the farm again in 1847, and found it in a bad state, and the farm buildings out of repair; some ash trees had been cut that ought not to have been; there was not a sufficient quantity of fallow, and more than eighty acres of wheat.

Leonard Freeman, Charles Goodes, and Richard Byers were examined to prove that Great Pratts was wheat in 1841.

Mr. Berridge, of Oundle, Northamptonshire, valued the dilapidations of the farm buildings at £49 8s. 1d.

Charles Paul Berkeley, Esq., of Oundle, land valuer, estimated the damage by miscropping and cutting an ash plantation, at £280; which he divided as follows:—

Deficiency in fallows in 1846 . . .	£60
Ditto in 1847	9
Excess of wheat	30
Ash plantation	20
Turnips unsown	24
Foulness of ditches	50
General overcropping	87
	£280

Mr. Lewis Fortescue said, the damage to the farm by mismanagement was £100 a-year for four years. He considered 23s. an acre would be a fair rent.

Mr. Rogers, of Oakley, said he should not like to give £550 a-year for it for 21 years. It was in an average state of farming.

Mr. Coling, the present tenant, said the farm was overworked and very foul; and he had taken six cart loads of docks from the top part of Great Pratts. The ditches were also very bad. He took the farm for 21 years at £550 a-year; with the house, all underwoods, and the shooting. He never saw a worse incoming.

The Rev. J. Ellman proved that Mr. Hipwell took the farm in 1832 at £400 a-year, for eight years; and was to underdrain the land. Mr. Ellman engaged to put up certain buildings, and find bushes for three years, if there were not sufficient on the farm, for draining. He made an ash plantation, which Mr. Hipwell cut down.

Charles Parris proved that he took a waggon-load of poles last year from the ash plantation to Mr. Hipwell's malting-yard at Pavenham.

A number of letters were put in by Mr. Palmer respecting the appointment of arbitrators, which arbitration was declined by Mr. Hipwell.

This closed the case on the part of the plaintiff.

Mr. Sharman commenced by making some observations on his not producing the cropping-book as evidence. His client had not kept a regular cropping-book; and therefore he (Mr. Sharman) declined to put it in evidence.

Mr. Palmer—You said there was no such book in existence; and Mr. Hipwell swore he had a cropping-book.

Mr. Sharman continued—There was no cropping-book regularly kept; but as his client might not be under the imputation of having a document he did not bring forward, he (Mr. Sharman) now produced it.

Mr. Palmer looked into it, and accepted it as evidence.

Mr. Sharman then proceeded with his observations on the case; but as his address occupied five hours and a-half in delivery, we cannot attempt more than a brief outline of it. The plaintiff's solicitor, he said, had refused to submit to the arbitration of any other persons than land agents; though he had named two of the most competent persons in the neighbourhood—Mr. Battams, one of the churchwardens of Carlton, and Mr. W. Rogers, churchwarden of Chellington, whose family had lived there two hundred years. The plaintiff then selected Mr. Berkeley, and the defendant Mr. Pain. Mr. Swaffield refused to act as umpire, and Mr. Berkeley advised an action. The defendant offered to refer the whole question to the land-steward of either the Duke of Bedford, the Duke of Manchester, Lord Ongley, the Hon. Rice Trevor, or Mr. Whitbread; but the plaintiff's solicitor objected, on the ground that all stewards were intimately acquainted with himself and the parties. They first bargained for land agents; their land

agent recommended an action; and then, as the case they said involved a question of law and fact, they insisted on its being referred to a barrister. The result was of the greatest importance to his client; for if one shilling damages were obtained it would carry costs, which would be utter ruin to all his future prospects in life. He (Mr. Sharman) felt the pressure of responsibility heavily upon him, and should have preferred it being argued before a judge and jury, where his client would have the benefit of the able argument of a gentleman like himself (the Arbitrator). Mr. Sharman then referred to the services rendered to the plaintiff by the wife and daughters of his client under the same roof for seven years; for which they had received not one shilling, but only two or three gowns. He should have expected that the plaintiff had suffered some grievous wrong before he brought an action against a person who had been his tenant for fifteen years; but the utmost ingenuity of Mr. Berkeley could not estimate the damage at above £280, which was not more than 1s. per acre per annum.

The Arbitrator—Mr. Berkeley did not exaggerate the damages. Some of the witnesses laid the damages generally at £400.

Mr. Sharman then referred to the appointment of Mr. Ellman to the living, whom he considered a fortunate man in receiving the gift of a living of £400 a year. Mr. Palmer said he (Mr. Ellman) had spent between £2,000 and £3,000 upon the farm, but the rent of his client had been raised £150, and he was the most injured party. Mr. Sharman then proceeded with the charges in detail. The defendant's set-off was the subject of another action. The first breach in this action was for not keeping the buildings and premises in repair.

The Arbitrator said he was of opinion the plaintiff could not recover for the repairs of the house.

Mr. Palmer admitted that it was a doubtful point of law whether the premises were demised, the plaintiff occupying a part of the house, though there was a covenant to repair, and he would give up the repairs of the house.

Mr. Sharman continued: The second breach was that the tenant had sown wheat more than twice in eight years; the third and fourth, that he had cut ash poles; the fifth, that there was not 50 acres of clear fallow; the sixth, that he had an excess of wheat; and the seventh, that he did not leave turnips, and that the fallows were not inploughed, and were fowl. Mr. Sharman then went through the different items of the repairs, and contended that since they were threatened with an action, everything had been put in repair to which his client was liable. He then came to the breach for sowing wheat more than twice, which he maintained came within the exception of the 30 acres mentioned in the agreement, and went through all the croppings in proof of his argument, commenting upon the evidence of Leonard Freeman, Parriss, Goodes, and Byers, as incredible witnesses, and contrasting their evidence with that of Goodes, the grandfather, Neal the policeman, and Brittain the shepherd. The next breach was the cutting down the ash plantation, which Mr. Sharman contended Mr. Hipwell had a right to cut, as all tenants do, which he should prove in evidence. The next breach was not having 50 acres of fallow, and Mr. Sharman upheld that 12 acres of land laid down for turnips was better than clear fallow, and he was not bound to have turnips besides 50 acres of clear fallow. Then came the grave charge, that he had an excess of wheat, upon which Mr. Sharman argued that there was no custom in Bedfordshire to exclude any quantity (though Mr. Berkeley strictly insisted on a four-course), and referred to several treatises for rotation crops on certain lands in support of the cropping pursued by Mr. Hipwell, but Mr. Berkeley appeared to have a monomania against wheat. The whole *gravamen* of the charge was, that there was too much wheat. It was often found impracticable to follow up a certain rotation, and he believed there was nothing to condemn in the system pursued by his client. Last of all came the sweeping clause of not farming in a husbandman-like manner, and not leaving turnips. Mr. Sharman said the plaintiff complained that there was not 20 acres of land left with turnips, but he denied that there was anything in the agreement that compelled the tenant to leave turnips. He then referred to the evidence of Mr. Rogers, Mr. Bennett, and Mr. Fortescue, as to the state of the farm. Mr. Rogers said some of the land was bad, some good, and the wheat was excellent. Mr. Bennett said the land was in a fair average condition. The sum of £2 was, however, paid into court for having turnips instead of clear fallow. Mr. Goodman admitted that the land was farmed well during the first lease, and that the land was cleaner than when it was let to Mr. Hipwell. It was much to be regretted that the proposition in Mr. Goodman's letter had not been followed, but Mr. Hipwell did not expect an action would follow from his not accepting the proposal, and it was inconvenient for him to attend here in August. He was conscious he had done right, and offered to take the farm again at an increased rent. A gentleman had laid the damage at £50, and he would ask if that was a case for damage for bad farming during a term of fifteen years. The land was of the lowest quality, and was let at £50 more than it was worth. The cropping was valued at £3 per acre, and Mr. Fortescue said some was good and some was bad. Mr. Kendall

and Mr. Sandon said, the general value of the cropping was from £8 to £10 per acre. The clergy ought not to set an example in pressing their extreme rights, and he was sure no other landlord in the county of Bedford would have brought it. He would not say that, *per se*, he was worse than others; but not another landlord but Mr. Ellman would be found to proceed against an inoffensive and respectable man, who had the sympathies of the whole parish—a man who acted right towards his neighbours below him; but that man was to be ruined because Mr. Berkeley rigidly adhered to the principle of following out a four-course system. He confidently trusted that he (the Arbitrator) would not ultimately give damages against his client which would be ruinous to him, and he was convinced that no jury in Bedfordshire would give a verdict for the plaintiff in an action. Under the previous tenancy there was no agreement that the plaintiff should be waited upon by Mrs. Hipwell for seven years, from 1832 to 1840. Let them withdraw their plea of the statute of limitations against the set-off of £306 10s., and he would go into the account.

Mr. Palmer objected to that course, and said no claim was before made for the £306 10s.; and if they would put in the account, a curious development would take place. Half-a-crown was charged fer setting an old hen on partridges' eggs—an extraordinary item! The declaration was in debt; and they pleaded payment, never indebted, and the statute of limitations.

The Arbitrator observed that it was not the usual way to open a case by calling upon the defendant to withdraw his plea, and say they would then go on with the action. It was clear the defendant was in a condition to pay, as he was receiving rent.

Mr. Sharman then proceeded to examine the following witnesses:—

Samuel Summerlin, William Spencer, George Stock, Joseph Neale, policeman; James Goodes, Thomas Gostick, Matthew Bolton, John Brittain, William Johnson, and Joseph Clarke, were examined to prove that Great Pratts was beans and tares in 1841.

Joseph Hilton, William Rudd, and John Rudd, of Carlton, were examined as to the making of certain repairs on the farm of Mr. Hipwell.

James Lett, of Woodmanster, near Croydon, Surrey, deposed that he was employed to cut the ash poles in Blackwall Spinney last year.

Walter Anderson, examined by Mr. Sharman: He was bailiff to his Grace the Duke of Bedford; he was farming agent, and farmed 1,100 acres in the parishes of Stevington and Oakley. There is a good deal of cold land in Stevington; on the east part it is of the same description as at Carlton. He had seen the schedule, and saw no objections in any of them; the duke would not complain of it; it was cold land system; he should feel justified in taking a larger quantity of wheat than was taken on that system. He had 297 acres of cold land in one distinct farm at Stevington; he had 100 acres of wheat every year; he had above 100 this year; he went on a five-course system; he sometimes had wheat after oats, and wheat after wheat, on newly broken-up land; it was done with the sanction of the Duke of Bedford; his Grace understands farming. There is no custom in Bedfordshire to restrict the quantity of wheat. He farmed on strong cold land with fallow, wheat, beans, wheat, tares (part fed, part mowed), wheat, seeds (generally mown); he mowed some twice this year; when fed close, the rays of the sun are admitted, and the ground gets as hard as a brick. Wheat might be got four times in seven years; he never had more than 20 acres of clear fallow in 297; he has tares; he follows a four-course system about his home. The farm at Stevington was in a dreadful state when taken of Lord Spencer; he farmed it till 1838. After it was purchased by his Grace, he (Mr. Anderson) farmed it at a price; he had 360 acres that were drained, on which fallow was abolished. It was not the custom of the country to leave turnips when a tenant quitted. The farm of Lord Spencer's was the same quality as this. It was not usual to repair a fence with rails where sheep were kept, but with bushes. He objected to rails except for a new fence. The Duke of Bedford was very particular about the fences. It was usual to cut ash poles at nine, ten, or eleven years' growth. Where a tenant paid rent and taxes, it was customary for him to cut them on going out. If he saw one part of a plantation higher than another, and some maiden trees growing, he should cut them all, except prohibited by a particular clause; it was best to cut a plantation altogether. He knew the farm previously to the one he had at Stevington; it was in very bad condition; he saw it previously to the harvest in 1847; he rode through it in July to Mr. Hipwell's; he went to Blackwell Spinney, and all the way up the farm. He did not make any particular remark; the wheat and oats were good; he saw nothing bad as he went; he observed to Mr. Rogers that the wheat was remarkably good.

By the Arbitrator: The wheat looked well; his own wheat was standing, and the corn looked very big; the duke complimented him in 1836.

By Mr. Sharman: In 1832 or 1833 the crops were bad. He put it at £400 a-year, but it must be drained. All the lower part might be blackthorn. It would take £1,000 to drain the property; it would cost £1 per acre, besides carting. Wild

onions infest the farm. There was some twitch too. This was not the time to drain; it was a wet season. The appearance of May-weed was no criterion of bad farming. There was not much where there was twitch. It came most when it was wet, or the land ploughed out of season. It was no proof in itself of foulness. He knew Mr. Goodman in 1847; he saw him in the Swan Market Room; he asked to be allowed to see the Duke of Bedford's stock; witness inquired if he objected to Mr. Hipwell, and he said, "Nonsense! the farm is in a better state than when he took it," and asked witness to use his interest to get him to take it again. Mr. Goodman said, the rent was £550 a-year, and he (Mr. Anderson) said that was a rent he could not pay, and declined to use his influence. £1 an acre would be plenty, as times are now. A lease, with the landlord's assistance, it might be worth 24s. or 25s. an acre; it would take £1,000 to drain it.

Mr. Sharman then read from books what was considered a four-course system, to show that Mr. Hipwell's farming was not inconsistent with the plan laid down.

By Mr. Palmer: He gave £240 a-year for 350 acres—about 17s. an acre. The Duke of Bedford asked no more. In 1847, he saw a field of oats near the barn, and the other fields were wheat. The crops were all standing. He saw one piece of tares. Mr. Rogers said the crops looked so well it would let the farm.

Mr. W. Kendall, of Odell; Mr. Swaffield, of Ampthill Park; Mr. Bennett, steward to his Grace the Duke of Bedford; Mr. Henry Boulton; Mr. C. Higgins, and Mr. Pain were also called to prove that Mr. Hipwell farmed according to the custom of the country; that it was the custom to cut ash plantations; that it was usual to stop gaps with bushes, in fences to arable land; that the farm was in good condition; and that it was let at its full value. They all said they would not take it, but Mr. Berkeley said if it was at liberty he could get twenty tenants to take it at the same rent.

Mr. Sharman said he should not examine Mr. Hipwell, but Mr. Palmer might cross examine him the same as if he had been examined in chief. Mr. Palmer declined that course, but afterwards questioned Mr. Hipwell as to the time the entries were made in the cropping book, when it appeared that no entries were made before 1833 or 1834, though it contained an account of previous years, Mr. Palmer also questioned Mr. Hipwell respecting the repairs.

This closed the examination of witnesses for defendant, leaving Great Pratts in dispute about the cropping.

Mr. Palmer then ably replied upon the whole case, and gave a history of the legal proceedings, which were taken in consequence of Mr. Hipwell refusing to appoint a person to go over the farm at the time of his quitting, with another person to be appointed by Mr. Ellman. His case was supported by the most unexceptionable testimony respecting the dilapidations, including the giant mind of Mr. Berkeley, the knowledge of Mr. Berridge, and the experience of Mr. Goodman. He commented strongly upon the evidence of some of the witnesses for the defendant respecting the cropping, contrasting it with others he had produced, and relying confidently on the testimony of Leonard Freeman and Richard Byers, formerly a policeman. The gentlemen farmers of Bedfordshire might think an incumbent an incumbrance, but if they had been acquainted with Mr. Ellman as long as he had, they would know him as a man of honour, integrity, and christian feeling, and possessing every virtue that adorns the human mind. Several respectable witnesses were called to prove the present state of the farm instead of what it was in October last, and the custom of the country in regard to cropping, cutting ash spinnies, and repairing fences, which was not the question, the defendant farming under an agreement, and an action was brought for a breach of covenant. Mr. Palmer then alluded to the cross nature of the action as a most fraudulent demand for £306 10s., a claim never before heard of, but which had been abandoned. Mr. Palmer, in conclusion, said he should leave the case in the hands of the Arbitrator, with full confidence that he would do justice between the parties.

At the close of Mr. Palmer's address the proceedings terminated, the expense of which has been roughly estimated at £1,500.

The Arbitrator has not yet made his award.

WINCHESTER, August 23.—(To the Editor of the Mark Lane Express.)—Sir,—In my visits to Ireland I have noticed a plan which, in that humid climate, is almost universally adopted, and I have no doubt with good effect. The corn, no matter of what description, oats or wheat, is not at once carried to the large stock, as is the custom here, but is piled in the field at the top of the ridge, in a number of small stacks, or "huts" as they are called, each of which does not contain more than a fair one-horse cart load of sheaves. These huts are thatched, not perhaps very carefully, but in a way sufficient to keep out the rain; and when their contents may be supposed to have acquired sufficient condition, they are formed into the large stack, on the "haggard" or stack yard. Any Irish reaper can explain this process, and, Irish though it be, it appears to me that in this most unfortunate season, its adoption might be worth consideration.—Yours, respectfully, J. B.

PROGRESS OF AGRICULTURAL CHEMISTRY, 1848.

BY BERZELIUS.

M. Kuhlmann has during the past year made some experiments on the action of various manures.* These trials have been continued from year to year with all the zeal of an amateur and all the skill of a practical man, and will be of great importance in assisting to establish a national agriculture. The results of each year may be considered as a sure step towards understanding those general laws which govern vegetation, and which can only fully come within our grasp by a long series of such experiments. The results which have been published seem to prove—

1. That, for cultivated plants, the efficacy of manures is determined by the *quantity of ammonia they are capable of supplying*, or, more correctly, by the quantity of nitrogen they contain. It is immaterial whether this nitrogen exists in the form of ammonia combined with an acid (or as nitric acid), or as nitrogenized organic bodies. Ammoniacal salts often give less striking results than were obtained when the nitrogen was found supplied in nitric acid. This seemed, however, to be the consequence of the decomposition of the ammoniacal salts by alkaline and earthy carbonates (as carbonate of lime) existing in the soil, and the consequent formation and waste of a certain quantity of the volatile carbonate of ammonia.

2. In nitrates (as nitrate of soda) the nitric acid seemed to be the principal active element, though the base was not without a certain influence; for nitrate of soda was more valuable than nitrate of lime.

3. Phosphates (*alone*) did not produce much result on the crops, though this seemed to be caused by the soil already containing them in a sufficient quantity.

4. Organic matters destitute of nitrogen (as oil, sugar, &c.) were not of any service, and in some cases were even injurious. The value of oil-cakes of various kinds did not bear any proportion to the quantity of oil they contained, but rather to the presence of nitrogen in some form or other.

5. When salts soluble in water were applied as manures, their powers seemed to be exhausted by the first crops. [We have already had occasion to comment on the value of these experiments, and would direct the attention of those who are engaged in manufacturing manures most especially to them, as there is no doubt but that they contain the germ of rules which ought to guide them in their difficult undertaking.]

* For full particulars, see *Farmers' Journal* of last year, and *Ann. de Chimie et de Phys.*, 18, 138.

I. VEGETATION IN A SOIL ENTIRELY DEPRIVED OF ORGANIC MATTER.

The Prince Salm Horstmar* has published some trials on the vegetation of grains sown in artificial soil composed of a substance calcined so as to drive off all organic matter, after which portions of wood-ashes, calcined bones, nitrate of ammonia, and a little ammoniacal phosphate of soda were added.

A grain of oats in this soil produced three stalks, and 153 perfectly-formed oats.

A grain of rape produced 240 perfectly-developed seeds. [We have also, from some experiments, reason to believe that such may be the case with the turnip.]

From the experiment, it is therefore evident that the above plants draw their carbon and hydrogen from the air and water. [With this conclusion, and the inference which may follow it, we are especially disposed to find fault. Though these plants have in this especial case drawn the carbon they require from the air around them, we must by no means infer that all vegetable manures are unnecessary, as, for instance, the vegetable part of stable manure, which Liebig thinks would be quite as useful if it were burnt and then applied to the soil. It is true that in the above experiment we have perfect plants without any carbon in the soil. There is, however, reason to believe that they will arrive sooner at maturity when all the food necessary to their perfect formation is presented to their roots in the proper proportion. It is this view that causes the writer, on his own farm, always to use a proportion of farm-yard manure along with all artificial manures.]

II. INFLUENCE OF THE GEOLOGICAL CHARACTER OF THE SOIL ON VEGETATION.

M. Hruschauer has reared plants on soils differing entirely in geological character from those on which they are generally found. For instance, he made some plants, which are commonly found on calcareous soils, grow on micacious gneiss; and he has shown, by analyzing the ashes of plants grown under such different circumstances, that if the plant found in the strange soil the peculiar sub-

* *Journ. fur pr. Chemie.*

stances required for its own use, they were appropriated by it, but never to the same extent as when it grew in its natural position.

III. AMMONIA IN ARABLE LAND.

M. Krocker has detected the presence of ammonia in soils which had not been manured, even to the depth of a foot and more. To be certain of this fact, he analyzed the plants by Will and Vallenthorp's method. He examined fifteen different soils by this test, and found that strong clays contained the most, and sandy soils the least quantity of ammonia. Pure sand, nevertheless, contained 0.031 per cent., and clay, before being manured, 0.17 per cent., which was the maximum quantity. With these facts before him, he has calculated that the quantity of ammonia in a hectare of soil, 25 centimetres deep, was, namely:

	Rhenish lbs.
In a hectare of sandy soil	4,045
In a hectare of clay soil	20,315

Other soils contained it in intermediate quantities.

IV. ACTION OF DILUTED ACIDS ON LIVING PLANTS.

M. Braconnet has proved by numerous experiments that all acids, whether organic (as vinegar) or inorganic (as sulphuric acid), even when much diluted, exercise an exceedingly injurious effect on living plants.

V. DISENGAGEMENT OF OXYGEN BY PLANTS.

In the report for 1845 we mentioned the experiments of M. Schultz, which seemed to prove that green living plants could separate oxygen gas from water destitute of carbonic acid, but containing small quantities of other organic acids (or even inorganic), acid salts, or sugar, or milk, sugar, and some other substances. These experiments were shortly after contradicted by M. Griesbach and by M. Grischoff. M. Goldmann has since made a new series of researches on the subject, and obtained the same results as M. Schultz had previously done.

We should be sorry to see such an important question left under such contradictory results.

VI. DEVELOPMENT OF THE VEGETABLE MATTER OF WHEAT AT DIFFERENT PERIODS OF ITS GROWTH.

M. Boussingault has made some experiments on the development of the vegetable matter of wheat at various stages. Agriculturists are of opinion that, if a crop be cut as it is coming into flower, it does not exhaust the soil; whilst if the crop be cut when it comes to maturity, all the nutritive part of the soil is removed. This almost universally-received opinion has been combatted by Matthieu de Dombasle, who declares that the plant, during its development up to the time of flowering, will draw from the soil all that is necessary for the fructification and perfecting of the grains; and that after this time the plants draw nothing from the soil, but elaborate the elements found in the stalk and roots. The first of these opinions is founded on the fact that when the crop is cut at the time of flowering, the nutritive elements are contained almost entirely in the stalk, the stubble, or the roots; whilst if, as already remarked, it be cut when arrived at maturity, all these nutritive elements have been employed in fructification. Therefore, when a crop is cut before flowering, we return to the soil, with the stubble and roots, all that they contain; but when the crop is cut ripe, the stubble and roots only contain fibrous substances of little use to future crops, and is consequently more exhausting.

M. Boussingault has proposed to settle the dispute by a series of experiments. With this view, he has taken at certain dates, from a field of wheat, 450 plants, with their roots, and analyzed them. These dates were May 19, June 9 (the time of flowering),and August 19 (the time of harvest).

With these data, he has calculated and arranged the following table:—

Date of Examination.	Increase of weight.	Carbon.	Hydrogen.	Oxygen.	Nitrogen.	Ashes.
	k.	k.	k.	k.	k.	k.
Seed set, 150k.	..	39.5	..	..	3.0	3.0
May 19, 1844	689	257.0	40.0	354.7	12.4	25.5
June 9	2631	1007.7	163.1	1370.7	23.7	65.8
Increase of weight from May 19 to June 9	1942	750.7	123.1	1016.6	11.3	40.3
Aug. 15, harvested	4666	1735.8	317.3	2324.3	42.0	186.6
Increase of weight from June 9 to Aug. 15	2035	728.1	154.2	953.6	18.3	120.8

The above table proves that neither of the two opinions advanced is correct. In fact, the increase of weight which takes place in the 21 days between 19th May and 9th June is scarcely as much as that which takes place *between 9th June and harvest.* But this increase of weight derives

increasing interest when the chemical analysis of the increase is shown. It will be observed that the increase in nitrogen in these two periods is as 11 : 18. If, then, we consider that it is from the atmosphere and water that the plants are principally supplied with carbon, hydrogen, and oxygen, there can be no doubt but that the opinion of Dombasle is erroneous, and that the opinion generally received, that green crops do not rob the soil of any of its essential ingredients, is also incorrect. At least, wheat (for the experiment was limited to that grain) removes nitrogen from the soil between the time of sowing and flowering in the proportion of 23.7 : 18.3, when compared with the whole time. It will also be observed that the inorganic parts are tripled between the time of flowering and harvest.

VII. NITROGEN IN VEGETABLE SUBSTANCES USED AS FOOD.

M. Horsford* has determined the quantity of nitrogen in a great number of substances which are used as food by man, and has arranged them in a table according to the quantity of nitrogen they contain, and which is also, in his opinion, the manner in which they should stand so as to show their comparative nutritive qualities. These experiments have been made under the direction of Liebig.

This opinion respecting the connexion between the comparative quantity of nitrogen present in an article of food and its comparative nutritive power, is neither quite incorrect nor yet is it altogether correct; for, in my opinion, the nutritive power of any vegetable product not only depends on the quantity of nitrogen it contains, but also on the nature of these nitrogenized elements, and the facility with which they take part in the chemical changes going on in the human body.

M. Horsford has also shown that the same fruit, the same grain, or the same root may vary considerably in the proportion of nitrogen compounds which it may contain, according to climate, the nature of the soil, and the kind of culture. The farmer is well aware that the turnips grown by bones, for instance, are more nutritious than turnips from farm-yard manure, thus proving that different manures make a difference in the value of the same root.

After perusing the previous report of the progress of agricultural chemistry, whilst we feel sorry that our own countrymen take such a small share in these important questions, there is yet more to encourage us than we ever before met with. There do at last seem to be some starting points on which to found a natural system of agriculture. The distance we are yet from the truth must not, need not, discourage us. Geology and chemistry are scarcely fifty years old, and yet how much has been done in these magnificent sciences! We will yet live to see the day when manures will be applied in the proper quantities, and of the *proper chemical composition* to suit each plant, and when the food we give to our domestic animals will also be suitable to the purpose we have in view in keeping them.

DARLINGTON FARMERS' CLUB.—JULY MEETING.

THE POTATO DISEASE OF 1846 AND 1847.—ITS CAUSE AND REMEDY.

In the absence of Henry Chaytor, Esq., the President, Mr. Walton, the Vice-Chairman, presided, and briefly remarked that as Mr. Cooke, who was present, had kindly undertaken to introduce the first subject for the day's discussion, and considering that Mr. Cooke was so well qualified, in a scientific point of view (as he had no doubt he was), to explain the cause of the phenomena, and its effects, which had been so fatal amongst the potato crops in those years, and trusting also that he would be able to suggest some means of counteracting the ravages of the disease, should it again become prevalent, he begged at once to introduce Mr. Cooke.

Mr. Cooke, on rising, said—Mr. Chairman and gentlemen—When any root or vegetable becomes the staple food of a considerable portion of the inhabitants of a country, any disease affecting such vegetable becomes a serious injury to those parties depending upon it for their food, as well as a national loss to the people. The wealth of every manufacturing country depends more on the development of its internal agricultural resources, than external ones; and, consequently, a good harvest, and an abundant supply of potatoes produced at home, is a source of prosperity to a nation such as we are, who are more or less dependent on other countries for our provisions. Most of you are aware that in the years 1846-7, the potato crops in this country were visited by a most malignant and destructive disease—a disease which at one time threatened almost the extermination of that valuable vegetable, not only in this, but in other countries. You are also aware that the disease has been attributed to

* Philosophical Mag.

very many different causes. It has, by some, been called a blight; by others, a disease produced in the plant itself; by some it is ascribed to insects, particularly by Mr. Smee, who states it is produced by an insect which he calls the *Aphis vastator;* others state it is produced from wet; and others, again, from the atmosphere. Besides these, many other causes have been surmised. As, however, the plant is so valuable in this country, and as symptoms of the disease are again developing themselves in some districts this year, I consider it the duty of every man who can afford any information on this subject, or who has in any manner traced the cause of this disease, to point it out; for the more the subject is examined into, and discussed, the more likely is the true cause of the disease to be found and the remedy suggested. I have no doubt many of you, gentlemen, can, from your own practical observations in the growth of this plant, contribute much valuable information on the question, which I hope you will do; but having myself proposed this subject, viz.—"The Potato Disease of 1846-7—its cause and remedy," as the subject for discussion this day, I presume you will expect me to open the matter, and to state my views upon it. I shall entreat your indulgence for the plainness of my address; and if you should differ from me in this matter, I trust you will candidly state your own views on the subject, and correct me on any point on which you think me in error, as my only wish in this matter is, to trace this disease, to find a remedy for it, and, if possible, save a valuable vegetable to the people of this and other nations. My attention was first called to this disease in the year 1846. A neighbour of mine had a plot of potatoes in his garden, in the month of August in that year, which were suddenly struck with the disease. This took place during a single night; as to-day they were perfectly healthy, in one night they were contaminated, and on the next day the disease was strongly developed in the leaves and haulm: in a very short time the leaves became black, as also did the haulm, and the whole plot had soon the peculiar black and shrivelled appearance characteristic of this disease. Knowing that I was often engaged in experiments of agricultural matters, my neighbour mentioned the subject to me, and requested me to examine them, and see what I thought was best to be done, as he did not like the idea of losing his crop. I did so, and upon examination of the leaves, I was much struck with their peculiar odour, which was not unlike bad mouldy hay, but with this peculiar addition, that there was a faint smell of ammonia. The business in which I have been sometime engaged, makes me peculiarly susceptible to the smell of ammonia; it being the object of a manure manufacturer to save all he can, and let none escape; consequently, whenever I detect a trace of it escaping in the atmosphere, in manures or from any other source, I generally look out for the cause of it. My curiosity being excited by the faint odour of the ammonia proceeding from the diseased potato leaves, I thought I would test them and see if they contained ammonia. I did so with a solution of caustic potash, and the test verified what I had previously detected in the odour, and that was that they contained ammonia, and in a considerable quantity; for when the solution of potash was added, the ammonia was evolved for some time, and was plainly to be detected by its peculiar pungent smell. Finding so much ammonia was present in the diseased leaves, it struck me it might have something to do with the disease itself. I therefore determined to see what effect it would have upon potato leaves. I accordingly collected some, and placed them under an inverted tumbler on a plate, and near them placed also under the glass a small piece of the sesqui-carbonate of ammonia, or what is called smelling salts (similar to this I produce). The leaves, when placed under the tumbler, were perfectly healthy and free from disease. They had not been under the tumbler more than one hour, where they were subject to a slight vapour of ammonia, than they began to blacken and assume the appearance these do which I now show you under this glass, and which exhibit all the appearance of leaves attacked with the real disease. We will now examine this potato plant, which, when brought into Mr. Dixon's office about one o'clock this afternoon, was perfectly healthy, as Mr. Dixon will verify. This plant, since I brought it in, I have subjected to the influence of the vapour of free ammonia, and the result you now see before you. Here, gentlemen, you see the disease produced in two hours, it being now just about three o'clock. I would ask you, gentlemen, if in the appearance this plant now has, there is anything similar to those affected with the potato disease? In my opinion, the disease now seen to exist in these leaves and plant is identical with the potato disease of the years 1846 and 1847; and this disease in the leaves of this plant is produced from the free ammonia contained under this glass. The experiment now made with these small pieces of ammonia, or smelling salts, are easily made by any party desirous of examining into this subject. Any of you can make it yourselves, by obtaining possession of your ladies' smelling bottles; the same salt is used in them; and if you take a small piece out, and insert it under a tumbler, in the manner I have now done, and also place there a few potato leaves, or a small potato plant, you will soon see them diseased in the same manner these now are. I would here remark that, feel-

ing convinced ammonia was the cause of this disease, and as the plot of potatoes was very seriously injured with it, in order to save the crop which was then well advanced I advised him to cut off all the haulm down to the ground, and sow the plot over with caustic or quick-lime, to evolve any ammonia present, and by so doing check the spread of the disease down the haulm to the potatoes themselves. This was done, and in October the potatoes were dug perfectly sound. I had the curiosity to examine the short portion of the haulm that was left when the tops were cut off. Down to a certain point (very close to the ground) the action of the disease was clearly to be traced. The inside of the haulm was wasted away, and the fibres remained like a net-work on the outside, showing clearly that the caustic lime had checked the disease by evolving the ammonia out of the poisonous matter generated by the disease itself, in the haulm that remained. I believe ammonia to be a propagator and conductor, in one shape or another, of all diseases incidental to vegetable, animal, or human life. Now, supposing we admit, for the sake of argument, the disease apparent in these leaves and plant to be the real potato disease, you see this disease is produced by the ammonia. Is it not fair to assume, if you can produce a disease by a certain agent, that that agent must be the cause of it. But if you would be satisfied on this, others would not; and therefore we must see what collateral evidence we can bring forward to support the position; for there is no question, it is most difficult to account for the presence of sufficient ammonia in the atmosphere to produce the disease, and many parties who have studied the subject would say, " Oh, we grant a disease in potato leaves and haulm could be produced by ammonia, and that ammonia could be evolved by treating diseased leaves with a solution of caustic potash; but this does not satisfactorily prove to us the potato disease of 1846 and 1847 was caused by it. Whence," they would say, " could free ammonia, to the extent necessary to produce it, be obtained? And are you not aware that any organic matter affected with disease sufficient to produce destruction and decomposition of the organic matter itself, is also sufficient to account for all the ammonia found to be developed by the diseased leaves first experimented upon?" Gentlemen, we will consider these points seriatim. As to the first, I would ask, are you aware of the potato disease existing in any locality where manufactories were carried on, generating gases that would enter into combination with free ammonia; or where anything was used as a manure containing any substances that would neutralize free ammonia? I am not; but, on the contrary, can quote several places where the potatoes were free from disease; and strange to say, those very places were situated in localities generating gases or vapours that would neutralize free ammonia; and also several cases where substances were used as a manure in the growth of the crop which would also free ammonia; and wherever these were used or existed, the potatoes were not affected by the disease. For example, the London papers, particularly the *Times*, and many of the local ones, during the continuance of the disease in 1846 and 1847, pointed out very many cases where the disease did not exist. I remember it was stated that in the neighbourhood of Swansea the potatoes were not affected with the disease. In the locality there are large smelting works, where fumes of sulphurous acid gas are constantly driven off. This gas has a strong tendency to combine with free ammonia, and neutralize it. Again, in the neighbourhood of our large alkali and sulphuric acid works, the potatoes escaped the disease. Here, again, were vapours of gases evolving from these manufactories, which neutralize free ammonia. Again, where substances were used as a manure which would neutralize free ammonia —for example, where sulphate of lime (commonly called gypsum) was used, or muriate of lime, or chloride of sodium (which is called common salt), or sea sand, sea weed, carbon, &c.—in all these cases, and in very many others, you will find it mentioned in the newspapers of those years that the potatoes were free from disease, and that in many of these cases most abundant crops were obtained, whilst disease existed all around. Now, gentlemen, I say it is fair to conclude if, during the prevalence of a peculiar disease, supposed to be caused by ammonia, we find potatoes exempt from its ravages in localities where there are manufactories evolving vapours or gases which will neutralize free ammonia, and where substances are used as manure which will do the same thing—I say it is fair to conclude the disease of the potatoes in 1846 and 1847 was caused by free ammonia, and that this ammonia existed in, and was diffused by and through the medium of, the atmosphere. Before I enter on the second point, as I have spoken to you a good deal about ammonia, and have shown you the effect it has upon potato leaves and plants, and have talked about neutralizing it, and so forth, I consider it is necessary, as all of you may not be acquainted with chemistry, to point out what ammonia is, and the difference between it in the free state and in the combined or neutralized state. I would here also remark on, and strongly impress upon your minds, the necessity of observing the distinction between *free ammonia* and *neutralized ammonia*. Under most circumstances, free ammonia is a rank poison, and destructive to plants or vegetables; whilst combined or neutralized am-

monia (for example, such as sulphate or muriate of ammonia) is one of the most powerful manures or fertilizers. There is, however, nothing strange in this; for many instances could be quoted in the vegetable and animal economy, where substances in one state are rank poisons or destructives, and where combined in another state are harmless, and in some cases inert. For example, take common salt, which is chemically called chloride of sodium, but commonly muriate of soda, or common salt: this is formed of an acid called hydrochloric, or muriatic acid, and soda, combined together; both of these when uncombined, or as hydrochloric acid and caustic soda, are most irritant poisons to vegetable and animal life. So also it is with ammonia: in a free state—*i. e.*, in a state of vapour—it is a poison to plants; in a combined state it is beneficial. In a free state, ammonia exists as a pungent vapour or gas, the result of the combination of two other gases, called hydrogen and nitrogen. Hydrogen gas is one of the principal component parts of water, and nitrogen gas is one of the principal component parts of the atmospheric air. The two gases, viz., hydrogen and nitrogen, when combined together in the proportion of one atom of nitrogen to three atoms of hydrogen, form ammonia; or, by weight, 82·35 nitrogen to 17·65 hydrogen form 100 parts of free ammonia, which is, as before stated, a pungent vapour or gas. This vapour or gas of ammonia has a very great affinity for acids, or acid vapours, such as, for example, sulphurous acid gas, or hydrochloric acid gas, or, as it is commonly called, muriatic acid gas. When, therefore, the vapour of free ammonia and the vapour of muriatic acid gas come in contact with each other, the two vapours neutralize each other, combination takes place between them, and the result is a salt similar to the one I produce, which is that of muriate of ammonia. In this state ammonia is beneficial to plants; but in this, if you smell this bottle where the ammonia is escaping in the free state, as you can tell by the pungent odour, it is most injurious to plants, and produces disease in them precisely similar to that you now see in these potato leaves. I particularly point out this distinction in the state of ammonia, because it is erroneously supposed by many that ammonia in any state is most beneficial to vegetation. Bearing this distinction in mind, I come to the second question to be considered, viz., as to the source whence free ammonia, to the extent necessary to produce the disease, could be obtained? I candidly admit this is most difficult to answer, and unless formed in the atmosphere itself, from causes which I shall hereafter explain, I see no other source from which it could be obtained in sufficient quantity. I must recall your attention, therefore, to what I have before stated. Free ammonia is composed of hydrogen and nitrogen gases, and the principal sources of these gases are water and the atmosphere. It is well known ammonia is constantly developed from many substances; but more particularly from organic matter in the state of petrefaction or decay. The last stage of the decomposition of organic matter, such as animal matter or blood, produces ammonia. It is also largely evolved from volcanoes, when in a state of activity; but notwithstanding considerable quantities may be thrown into the atmosphere from these causes, yet it is not sufficient, in my opinion, to account for the quantity that would, over such an extended surface, be necessary to produce the potato disease. Now it is well known to chemists that if water, or the atmospheric air, are subject to the influence of electricity, viz., by passing electric sparks through them, both of them are decomposed. When water is operated upon alone, hydrogen and oxygen gases are formed; and when atmospheric air is operated upon alone, nitric acid is formed. It is also well known that this globe, and all matter existing therein, is more or less subject to certain electrical influences and forces. When there is lightning, the enormous and magnificent powers of electricity are seen in their active state. The currents are then clearly to be traced by the flashes, and its further active and destructive effects are to be seen afterwards, perhaps in the destruction of some tree or building. There are, however, unseen and unfelt electric currents and forces, which are constantly active and in operation around us, and in every part of the world—how developed we know not; an Almighty power directs their power and forces. All that man can do to ascertain their source is mere conjecture; that they exist we know, and we have instruments that will detect them when in operation. These electric currents and forces are constantly playing an important part in the composition and decomposition of all matter on the face of the globe; and there is little doubt the atmosphere is constantly acted upon by them with more or less intensity. As this is the case—of which there is little doubt—then it is both possible and probable that our atmosphere is affected by them, and various changes made therein, which may, or may not, be beneficial to vegetation and mankind. To enter into the whole, or even a partial detail and explanation of what has already been discovered with respect to the electric currents and phenomena supposed to influence the formation, composition, and decomposition of matter, would be a most difficult subject—one that would require considerable explanation, and would be difficult to understand. It would require three or four discussions, at least, to enter at all satifactorily upon this most interesting matter. I will, therefore,

shortly state that I believe unseen and undetected currents of electricity, during the years 1846 and 1847, acted upon the atmosphere of this globe, and the moisture floating therein; that the result of such action was the decomposition of the moisture floating therein into its elementary gases, hydrogen and oxygen; and that, at the same time, the gases forming the atmosphere itself, viz., nitrogen and oxygen—and which are diffused through one another, but not combined—were disposed by the electric action to partially decompose and enter into new combinations; and that the result of one of these new combinations was ammonia, produced by a combination of the hydrogen resulting from the decomposition of the moisture floating in the atmosphere, with a portion of the nitrogen forming one of the gases constituting the atmosphere itself; and that from this source, influenced by the electric currents, was produced the free ammonia which caused the potato disease. Now, gentlemen, I am aware there may be many objections raised to this theory. Much could be said against it, and much in favour of it; and after all that could be said or written on the subject, the matter would still remain in a great measure undecided. Our philosophers have yet to trace more clearly the source and effect of the unseen but active currents and forces of electricity on matter, its influences and changes, before anything like a definite idea could be formed on this important point. I would, however, here remark, that during 1846 and 1847 electricity was strongly developed in the atmosphere in this country, and, strange to say, all the great diseases affecting either vegetable, animal, or human life, have been preceded by the development of large quantities of electricity in the atmosphere. Furthermore, all contagious and infectious diseases known to affect human life are in combination with ammonia; and it can be distinctly traced around and in the rooms of patients affected with disease. I would, did time permit, enter more largely into this interesting subject; but I am certain I have already tired your patience, and therefore shall consider the last point, viz.—Whether organic matter affected with disease sufficient to produce destruction and decomposition of it, is not sufficient to account for all the ammonia devolved by diseased leaves. My answer to this would be, decidedly not. I am aware organic matter in the state of disease will evolve ammonia, on its decomposition; but I never saw it so strongly developed, considering the bulk of the organic matter, as in the diseased potato leaves. Again, the fact is before us that free ammonia does produce disease in potato leaves and haulm, as I have by experiment clearly shown you; and with that fact before me I think it but fair to infer, that that which produces a disease is the cause of it, and that ammonia is not so much the result as the primary cause. The same may be said with respect to the insects and fungi which have been found and discovered by the microscope to exist in diseased potatoes; they are the result of the disease, and not the cause. As to Mr. Smee's *Aphis vastator*, I am surprised that any one, who has seen the real potato disease, should for one moment believe it was caused by, or was identical with, the destruction produced in that plant by what he calls the *Aphis vastator*. The disease produced by the *Aphis vastator* is a destruction of the plant itself by the insect, during which time the plant is fairly eaten away. In the potato disease the plant for a considerable time remains entire; the leaves and haulm dry up; no insect can at first be detected upon it: if the plant remain in a moist atmosphere, a sort of fungus appears upon it; but, if kept in a dry place, none whatever appears, or can be detected: the leaves and haulm become perfectly black and dry, and in that state can readily be reduced to the finest powder, without in the least staining the hand. Potatoes affected with the *Aphis vastator* have an adhesive feel, like that of gum, and have altogether a different appearance to those affected with the real disease. In thus taking up your time, I have done so, as I before stated, to endeavour to find a remedy for this disease, and to preserve the plant itself. If the cause is, as I believe it to be, free ammonia, then to prevent the disease our object is to neutralize it. The disease, I believe, first attacks the leaves, from thence extends to the haulm, and so to the roots and potatoes themselves. When once the leaves are affected, I believe the disease to be propagated by a sort of fermentation, somewhat similar to that produced by putting yeast in beer. If sulphate of lime (or gypsum), muriate of soda (common salt), or tidal sand, sea-weed, charcoal, caustic lime, or any other article, be used as a manure for them, which will neutralise free ammonia, or evolve it, I believe any of these will be found a preservative against this disease. I should recommend sulphate of lime, or muriate of lime, as the cheapest to be used. All the substances I have named will neutralize the effect of free ammonia, absorb, or evolve it; and it was also found practically, during the prevalence of the disease, that these substances, when used, did, in very many instances, which were reported in the papers, preserve the then growing crops of potatoes. I should myself, if I had a field showing symptoms of this disease, immediately sow it over, broadcast, with finely powdered sulphate of lime, in the proportion of 3 cwt. to the acre, or with the same quantity of muriate of lime mixed with half a cwt. of finely powdered charcoal. I should not care for either of these substances coming in contact with the leaves,

as I am certain they would do them no harm. Either of these articles would then prevent any undue excess of free ammonia in the atmosphere. These are substances for which the ammonia would have a greater affinity than for the potato leaves and haulm, and a combination would therefore be formed between these substances and the ammonia. The ammonia would be neutralized, and in that state become a fertilizer to the plant, instead of a destructive agent. Gentlemen, I must apologize to you for taking up so much of your valuable time, and I trust some of you will now favour us with your own views on this disease, what you think it is produced by, and what you have ever found a preventive to it.

Mr. WALTON concurred in the opinion, advanced by Mr. Cooke, that the disease of 1846 and 1847, which had almost totally destroyed the potato crop, proceeded from atmospheric causes, and not from any insect upon the plant. He was brought to this conclusion from the following fact:—A field of potatoes on his farm was completely blighted in one night, and from a state of perfect health became, to all appearance, one mass of disease, with the remarkable exception, that wherever a few trees sheltered the potatoes, there the plants were in their original flourishing condition, whilst the disease existed around them; and hence his conviction that this blight proceeded from the atmosphere. He would further remark, in support of Mr. Cooke's theory, that in the neighbourhood of the alkali works, at Shields, the potatoes were saved; and as it is well known that powerful gases are evolved from those and similar works, and existed in the surrounding atmosphere, he had no doubt in his own mind but that they had neutralized the destructive agent of the potato disease. He also had heard of many instances in which the potatoes were saved where sand was used. He, however, begged to ask Mr. Cooke whether it would be too late to apply the remedy after the disease was seen, as it (the disease) was so rapid in its operation as scarcely to be seen until fully developed?

Mr. COOKE, in reply to Mr. Walton, observed that if the potatoes were far advanced, the best and only method to save the crop would be to cut off the tops, and apply a dressing of caustic lime; but if in an early stage of their growth (in which the disease seldom attacked them), the remedy might be applied without cutting off the tops, being merely strewn broadcast over the field, the trifling injury that might occur to the leaves, from its caustic nature, being far overbalanced by the ultimate benefit produced by its application.

Mr. WILSON, of Urly Nook, remarked that the only solitary objection he could see to the theory advocated by Mr. Cooke was, the difficulty to imagine how this excess of free ammonia necessary for the production of the disease could exist, more especially, as Mr. Cooke would be perfectly aware, on account of the rapid union and combination of gases in the atmosphere; and, therefore, he felt very doubtful if ammonia was the cause of the disease. This was the only difficulty that presented itself with regard to the cause being ammonia; but he quite agreed with Mr. Cooke that the disease proceeded from the atmosphere.

Several other members gave it as their decided opinion that the disease was produced by atmospheric influence, and thought it probable that Mr. Cooke's views might be right.

A vote of thanks was passed to Mr. Cooke for his interesting lecture.

CHOOSING A HORSE.

Many persons, when purchasing a horse, simply look at his general appearance, or at best look only at his bulk and teeth and paces. A horse bought in this careless manner is almost certain to be a bad bargain; he may be quite unsuitable for the work intended for him; he may want strength, or speed, or endurance; or he may be lazy, vicious, unsound, unsafe, or exceedingly ill-trained. A purchaser, in order to make a common-sense bargain, must know, not only the aggregate appearance of the particular kind of horse which he wants, but the good points and the defects of horses in general, the structural developments on which the good points depend, the features and symptoms by which the defects are indicated, the precise conformation which secures any one special group or preponderance of properties, and the best methods of ascertaining the animal's temper and education; and he must inquire into all these, and bring his judgment to bear upon them collectively, before he makes his purchase.

Strength, in combination with requisite speed, and with the greatest possible action and docility, is the prime property in every kind of horse; and it always depends on the form of the chest, the mutual balance of limbs and body, and the general symmetrical development of bone and muscle. When a race-horse is running, or when any other

horse is exercising a high degree of strength, his blood flows through the lungs with an increased velocity proportioned to the degree of exertion; and unless his chest be large, and be easily acted on by the muscles, either the blood must take its transit but partially oxygenized, and pass to the other parts of the system in a state unfit for the due performance of its office, and in consequence allow the body to become fatigued for want of due nourishment, or the flow of it through the lungs is partially obstructed by the inability of the muscles to make a sufficiently great expansion, and the animal suffers a sensation of choking and congestion, and is almost on the point of being suffocated.

The trunk of most horses is quite sufficient in length, but that of very many is deficient in breadth. A long body supported on broad and muscular loins is advantageous; and the whole trunk of every horse ought to describe a sweeping natural outline of two gentle and unequal curves —the greater curve extending from the withers to the quarters, and the smaller thence to the stump of the tail; and though the latter curve might seem of little consequence, it is really very important—for a horse with a tail not well set, so as to form a good curve, is rarely if ever a good goer. But the trunk, besides being symmetrical and properly curved, must be supported by well-adjusted and duly-proportioned limbs, its must be connected with a well-sloped, clean, and muscular shoulder, strong and lengthy arms, powerful and firm-tendoned shanks, well-set fetlocks, and sound, well-formed, and fairly adjusted feet.

The fore-feet, in order to ensure accurate motion, must, in a front view, stand parallel with the sides of the animal's body; and the toes must point forward, and not be much turned either inward or outward. When the toes are turned inward, the horse is awkward in action, and continually liable to stumble, and is also subject to splints and injuries of the fetlock; and when they are turned outwards, the foot comes in contact with the opposite leg, and bruises it. The feet should be sound, and the hoofs free from grogginess. Flat feet, with low heels, are particularly bad.

The hind extremities are principally concerned in both the power and the speed of action; they are required, in all cases, to comprise long quarters, strong loins, and well-formed legs; and, in different animals, they exhibit certain varieties of conformation in peculiar fitness for the different kinds of pace. "For galloping," says Professor Dick, "the lengthy horizontal or finely turned quarter, and lengthy thigh, are the best adapted for speed; while for trotting, there is a greater degree of sloping in the quarter, which is less pleasing to the eye than the galloping quarter, and a rotund muscularity well observed in all fast trotters. In all, however, this muscularity indicates great strength and action, more especially if it is observed, on viewing the animal from behind, that there is a fine arch, from haunch to haunch, over his quarters, and that there is such a swelling out of the muscles of his thighs, that, when measured across, there would be a greater breadth than in his haunches, The limbs should then gradually approximate each other, tapering with the diminution of the swell of the muscles as they send off their tendons, until they reach the hocks. Unless the hock is well formed, there cannot be durability; and if there is sometimes speed with a badly formed hock, it is never for a long run. The most common defect which at present exists is a liability to curbs, such being denominated curby hocks; these are seen, on taking a side view, by the smallness of the leg below the hock, by the great projection of the point of the hock, and by a bent-like appearance at the lower part of it, with a greater or less tuberosity at the back part; these hocks are also more liable to spavins and other diseases of the hock-joints. There is also an opposite form of hock which is too straight; this is connected with a great length of pastern, and is liable to thorough pins in the hock, windgalls, and sprains of the suspensary ligament at the fetlock joint. A well-formed hock, viewed from behind, should stand with the toe of the hoof and the fetlock in a line running parallel with the body; or, if altered from that direction, the toe should incline a little outwards.

The first thing, in choosing a horse, is to see, by a general glance, whether the animal seem to be of the breed and size and strength most suited to the purposes for which he is wanted. The next thing is to ascertain his age. The third thing is to observe the action—that it be high, extensive, and free. The fourth thing is to observe the peculiarities of conformation which indicate strength, speed, and endurance, and to see that these are developed in such proportions as to serve the precise purposes for which the horse is wanted. When mere speed is the grand object, the horse's shape must resemble that of a greyhound; and when mere strength is the grand object, it ought to resemble that of a bulldog. But whether the properties of speed or the properties of strength preponderate, the special configuration of chest requisite for full and long wind, and the special structure of all the parts of the limbs requisite for both daily and aggregate endurance, ought to be very distinctly present. Many a strong, active, good-chested horse has such defects in the limbs, that, though he may do hard work for a time, he cannot continue at it, but soon breaks down, and begins to decline in both strength and spirit.

The last thing, and a very important one, to be attended to in the choosing of a horse, is his temper and training. Many a horse, otherwise unexceptionable or eminently excellent, is so untractable or vicious in disposition as to be worse than useless. A fine calm eye and a pleasant countenance serve in some degree to indicate the temper; but the actual habits are better indicators of both this and the education, and may somewhat be easily put to the test. When a personal trial of a saddle-horse is not obtainable, something of both his temper and education, but especially of the latter, may be learned by observing his conduct while he is led or ridden by another person. See if he obey the bridle or collar rein; if he stop ot once when he is checked; if he advance whenever he is commanded; if he turn to one side or the other without much bend of the neck, or looking as if he were turned by main force. A horse well-mouthed, and of a good disposition, may have a will of his own; but he never shows it in opposition to that of his master; to every, and to the lightest touch of the rein, he yields implicit and prompt obedience. This is a very desirable quality, and you may meet with horses having it in great perfection. Observe also if he heed the voice of his attendant. If you see that he heeds neither rein nor voice, or that he answers tardily, you may justly doubt whether he is thoroughly educated. When a trial is possible, mount the horse and start at a walk. See if there be any lameness, for it is most likely to be discovered at starting; after the horse is out a bit, he disregards a slight lameness and does not show it. Observe next how he walks, if he step well out, taking a good long stride; if he walk smartly, four miles an hour is a good walking, and five miles is very fast; see if he set down the foot all at once, the heel rather sooner than the toe; see that he do not trip often while walking. Observe also how he carries his head, and bears upon the bridle; if he carry it low, or bear heavy on the rein, as if he meant you to carry it for him, be sure you will not like him—he will not be pleasant to ride—he is not well broken. Take him next through a crowded street, still at a walk, and notice how he passes carriages and horses. He should himself incline to pass them on the proper side; but this is a thing which horses learn very slowly, and it may be forgiven him if he has not learned it. He should not start, stop, or shy, at objects of any kind; if he do, he is either uneducated, or too timid ever to be fully educated. Strange noises may be allowed to produce some animation in the horse's manner; but if they make him restive, disobedient, or wilful, do not have him—his timidity or awkwardness will get you into a scrape. From a walk, you urge the horse to a trot. There is a great difference in the trot of different horses; in one it is easy; in another, rough; in another, quick; in another, slow; and in very many horses, it is neither one thing nor another, but a curious provoking sort of compound, shuffling, trotting, walking, creeping, and cantering, all in one. This last is no doubt meant for a trot, but is a sorry imitation. If you want a trotting horse, you will, of course, have nothing to do with a beast of this sort. He may nevertheless be a good canterer. The canter, the walk, and the gallop, are natural paces; the trot is altogether produced by training; and you need not therefore wonder that the trot is often worse performed than any of the others. The horse is generally taught to canter with the right foot forward; but the individual is best taught who changes from the one foot to the other, sometimes with the right, and sometimes with the left in advance. When well-trained, the horse is what they call "collected" in his centre—that is, he leaves the ground and meets it without any jerk; you are not jolted out of the saddle, and you find no difficulty in keeping the stirrup still, not oscillating backward and forward like a pendulum. After the canter you may try the gallop, for two or three hundred yards. It should be performed in long steady bounds, without jolting, and without irregularity. An inexperienced galloper takes a short stride, and makes a great fuss about it; and while all his strides are confined, some are shorter and some are longer. After the trial-gallop pull the horse up; let him stand for a moment, and slacken the reins; then cast your eyes upon the fore legs; if they be weak or badly formed, they will tremble. Some nervous horses will shake a little merely by the agitation of galloping; but in these horses the trembling is rarely perceived in the second short gallop: and you may easily see by other signs, such as champing the bit, pawing the ground, and animation of the ears, that fieriness of temper has more to do with it than any fault in the legs. For any work besides the saddle, the trial must be somewhat different. If the horse be meant for hunting, you must try how he can leap; if for harness, you must harness him to a gig or a coach; if for the cart or the dray, you must see that he is willing to draw a full load. Laziness is as much a characteristic of some horses as of some men; and it is often an incurable malady; and not a trace of it should be perceptible in the horse you purchase. If he require much of the whip and the spur, with a full load, he possibly would be a bad bargain were he given to you in a present: and even though he should work well for a short distance or in company with another horse, he may, on being tried over several miles or without any company, prove an incorrigible sluggard.—Wilson's Rural Cyclopædia.

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Special Council was held at the De Grey Rooms, York, on Monday, the 10th July; present, the Earl of Yarborough, President, in the Chair; Duke of Richmond; Earl of Lonsdale; Hon. R. H. Clive, M.P.; Sir John Johnstone, Bart., M. P.; Mr. Raymond Barker; Mr. John Booth; Mr. H. Brandreth; Colonel Challoner; Mr. Bell Crompton; Mr. Henley, M.P.; Mr. Fisher Hobbs; Mr. Hudson, M.P.; Mr. Stansfield, M.P.; Mr. C. Hampden Turner; and Mr. George Turner.

The Council took into their consideration the various points of business brought before them in connexion with the details of the York meeting.

A Special Council was held at the Guildhall, York, on Friday, the 14th July; present, the Earl of Yarborough, President, in the Chair; Hon. Captain Dudley Pelham, R.N.; Sir M. W. Ridley, Bart.; Sir John Johnstone, Bart., M.P.; Mr. Barnett; Mr. Booth; Colonel Challoner; Mr. Kinder; Mr. Shelley; Mr. Shaw, London: and Mr. Thompson.

The business of the Council was confined to the reception from Mr. Mauleverer of a complaint respecting his inability to obtain wine at the Council dinner; to ordering the payment of various sums of money in discharge of local claims; to the rate of payment to labourers in the show yard; to the re-engagement of Mr. Manning as contractor of works at the Norwich meeting; to the conveyance to the Commissioners of Metropolitan Police in London, the perfect approbation of the Council with the conduct of Inspecter Otway and the men under his control; and to a vote of thanks to Mr. Foster, secretary to the York Local Committee, for the zealous discharge of his duties of that office.

A Weekly Council was held at the Society's House, in Hanover-square, London, on Tuesday, the 25th of July; present, Colonel Challoner, in the Chair; Earl of Lonsdale; Sir J. J. Tyrell, Bart., M.P.; Mr. J. Baines; Mr. Raymond Barker; Mr. Fisher Hobbs; Mr. Kinder; Mr. G. W. Maddison; Mr. Milward; Mr. C. E. Overman; Professor Sewell; Professor Simonds; Mr. T. R. Tweed; and Mr. Jonas Webb.

Diseases among Sheep.—Mr. Leyland Woods, of Chilgrove, near Chichester, addressed a letter to the Council, on the subject of a disorder which had made its appearance among his sheep. About eight days ago it was observed that many of his sheep were sore and breaking out, chiefly round the lips and nose, the soreness, however, seeming to extend also to the gums. The eruptions had a disagreeable odour proceeding from them, and prevented the sheep from taking their food with ease. The lambs were affected as well as the sheep, but appeared to bear the attacks better. The stronger sheep suffered more severely than the weakly ones. The lips of the animals were so considerably swollen as to render them disfigured and unsightly. The complaint was not general in that part of the country, but the sheep of some of Mr. Wood's neighbours had also been attacked. He had, however, seen none in the market so affected, although some thousands of sheep were taken thither once a fortnight. His own sheep had never been off his farm, nor did droves or strange sheep pass by. The complaint made its appearance at once, a great number being attacked in the course of a couple of days.—Mr. Milward informed the Council that five or six yeas ago a flock of his Leicester sheep in Nottinghamshire were attacked by a similar distemper, of which many of them died; but the skins of the animals, on removal from the body, were not found to be affected.—Sir John Tyrell concurred with Mr. Milward in regarding the complaint in Mr. Wood's sheep, as totally distinct from the fearful disease which had now made its appearance under the symptoms of the small-pox.—Professor Sewell regarded it as the old epidemic in a more severe form.

Sir John Tyrell then reported to the Council the prevalence of the small-pox among sheep in Essex, Hertfordshire, and Wiltshire, although he believed that the Sussex Down flocks were at present free. He had heard of the disease three-quarters of a year ago, and lately of its occurrence in Rochford and Dengey Hundreds in Essex, but had now experienced two cases among his own sheep. The first case occurred in a flock consisting of 92 fat ewes (with their lambs) fed on oil-cake, which were taken ill on the previous Wednesday, and had salts administered to them. The other case was that of a four-year-old wether, which occurred the previous morning, when the animal was immediately killed. The disease in both these cases was distinctly evident on the neck and belly of the sheep, the outer skin being affected in those parts with dark red blotches. Those skins having been rejected by the fellmonger, had been submitted by Sir John Tyrell to the inspection of Sir Benjamin Brodie, the eminent surgeon, as well as to that of Mr. Tomkins, of the National Vaccine Institution. He believed there had been a controversy among the first medical men regarding the best mode of treating small-pox, but that now it was generally agreed that the specific virus being a poison, the system required sustaining in its powers, and not exhausting by bleeding and physic. He had been recommended to adopt the plan of vaccination, introducing the vaccine lymph, agreeably with Mr. Tomkins's suggestion, behind the ear of the sheep, so that the animal might not be able to disturb the pustules by mechanical friction. Although Sir John Tyrell's sheep were near a road, and might have taken the disease by direct communication, he knew of cases, particularly of that of the Hon. Mr.

Petre, where the sheep had been long kept in an isolated state.—Mr. Fisher Hobbs was very glad that Sir John Tyrell had attended the Council that day, and brought under the notice of the members the very important and serious question of the small-pox among sheep, introduced into this country by foreign importation of animals suffering from that fearful malady. He was afraid that the disease in question would prove one of the most awful scourges to the farmers of this country, many of whom had, on his own personal knowledge, already suffered the most ruinous losses in their flocks in consequence of the small-pox. The infected animals having entered the port of London from the continent, had been the means of extending the malady in every direction in which they had been distributed; and, as it was natural to suppose, the eastern counties of England had been the first to receive the fatal infection. So much alarmed, indeed, had the graziers in the neighbourhood of Colchester become, in consequence of the losses which had occurred in that part of Essex, that many of those whose pastures lay adjoining the public roads or lanes had fenced in the entrances to their fields by a barrier formed of a hurdle with gorse or other bushes interposed between it and the gate, for the purpose of obstructing all communication whatever between their own flocks and those of strangers. Three-quarters of a year ago, Captain Stanley Carr, an honorary member of the Society, residing near Lübeck, on being made acquainted, through public as well as private channels of communication, with the fact of the introduction into England (by importations of sheep from Hamburgh) of the malady under consideration, and with the ravages of which, in Germany, he was so well aware, immediately addressed a notice of warning to the English farmers through the columns of the *Mark Lane Express*, and briefly stated the course adopted on the Continent on the appearance of the disease in any locality. Immediately afterwards he addressed a more detailed letter to the Council, on the causes, symptoms, prevention, and cure of the disease. That letter was at once not only made known to the members, in the Journal of the Society (viii., 489), but published at a cheap rate in the form of a pamphlet for general distribution among the farmers of the country; and Mr. Hobbs, thinking that importations might occur, had himself taken the earliest opportunity of recommending its insertion in the *Essex Standard* for the information of the farmers in the eastern part of that county; a step which, unfortunately, proved to be most requisite, for within one week from that time, a cargo of diseased sheep arrived in London from the Continent, and were sold in Smithfield market. Mr. Hobbs then quoted numerous cases of the disease in that part of the country; and particularly referred to the case of Mr. Baker, of Birch hall, near Kirby, who, having purchased about 100 sheep in Colchester market, and put them along with the rest of his flock, soon found symptoms of small-pox become visible among the purchased sheep, of which some died on the spot, while the remainder, without loss of time, were returned upon the hands of the salesman from whom he had obtained them, not, however, without having left behind them that taint of disease which so much affected Mr. Baker's own sheep, that within 10 days from the date of purchase he was under the necessity of destroying no less than 50 head of them: also to the case of Mr. Page, who resided near Bury St. Edmunds, and had incurred a loss of more than £500 from the small-pox among his sheep: and to that of Mr. Muskett, of Norfolk, who, from the same cause, and in a period of about 10 days, had lost upwards of 12 score of his flock; while smaller farmers, who had been deprived of nearly one-half of their sheep, were almost ruined by the ravages of the disease. On the other hand, Mr. Hobbs had reason to believe that the dealers made a secret of the disease for the purpose of getting rid of their sheep, with the intention of making no new purchases: he having met with only a single individual in Colchester market who would acknowledge in his own case any occurrence of the disease, although during the last month he believed that no less than 500 sheep, more or less diseased, had been slaughtered, and sent from the eastern counties to the public markets of the metropolis. Mr. Hobbs having then alluded to the power which corporate bodies possessed of fining individuals who brought diseased animals to markets within their jurisdiction, expressed his regret that, under the control of the Board of Trade, the Government had not made it imperative on all corporate bodies in towns where the disease had appeared to take the same precautions in the appointment of inspectors, and the inflicting of fines on their representation, as had already been done in so public-spirited a manner by the mayor and corporation of Norwich. He was sorry to find that other corporate towns within the eastern counties had evinced so much apathy on the subject as not to take the same precautionary measures. Mr. Fisher Hobbs concluded his observations by regretting the absence of Professor Simonds, whose most excellent, cheap, and timely work on the subject of the small-pox in sheep, furnished as it was with a most interesting history of the origin and progress of the disease, and illustrated by plates accurately drawn and coloured after nature, and a detailed statement of the most important cases which had occurred of the disease, ought, in his opinion, at the present moment, to be in the hands of every individual in the kingdom interested in the subject of the sheep itself, or in the economical and sanitary questions connected with its sale in the public markets.—Mr. Kinder bore testimony to the prevalence of the disease in Hertfordshire, one individual in that county having during the previous week suffered a loss of £200 on account of its ravages.—Sir John Tyrell could also confirm the accuracy of Mr. Fisher Hobbs's statement in reference to the county of Essex.—Professor Simonds having at that moment entered the room, the Chairman inquired of him, Whether the symptoms of small-pox in the sheep were so distinct and marked in their character as to prevent the possibility of its being confounded with any other disorder of that animal? To which inquiry, Professor Simonds replied that no mistake could be possibly made on the subject in consequence of the peculiar and marked symptoms of the disease; the only other disorder of any consequence affecting the

skin of the sheep being the ordinary "scab," which was of a local chronic character, and only slightly affected the constitution; while in the case of the small-pox very great constitutional derangement ensued on the appearance of the eruption.—Mr. Fisher Hobbs took that opportunity of asking Professor Simonds his opinion respecting the quality of the flesh of sheep dying of small-pox as human food; to which Professor Simonds replied, that he regarded such diseased carcases as furnishing the most prejudicial food that could possibly be given to any individuals; and so much so, that if at any time on board-ship a single sheep gave symptoms of the disease, the whole cargo of that animal on board ought at once to be slaughtered.—The Chairman thought that the parties who received the tolls at public fairs ought to be held responsible for the admission of sheep suspected of being diseased.—Professor Simonds then favoured the Council with the following statement connected with the symptoms of the disease, and the best means of preventing its extension:

The disease had long been known in Germany, Italy, and France, and in Paris it had never been entirely extinct; but from the knowledge of its character and experience in the modes of its treatment, especially by inoculation of the lambs when six or eight months old with the true pock-matter of the sheep in its mildest form, the loss generally did not amount to more than 5 per cent., often not one, or even one-quarter per cent., while in this country, where the disease had already become prevalent in certain counties, and in other localities where the disease was left unopposed in the progress of its ravages, the loss by death amounted to no less than 50 per cent. of the animals attacked by it. The disease he described as not epizootic, or conveyed through the atmosphere, but as infectious as well as contagious, having however a limit to the sphere of its activity. He regretted to state that this disease, from interested motives, had by certain parties been kept a secret from the public, for unless the difficulty, in his opinion, be met openly and boldly, and it be indiscriminately ascertained who has, and who has not, the disease among his flocks, the evil would go on accumulating, and the whole country would become one mass of disease. He remarked, in reference to the first indications of the disease, that there were not in this, as in many others, any premonitory symptoms; but that the constitutional and local appearances developed themselves simultaneously. The small-pox in the sheep was analogous to the same disease in the human subject. The poison, after having entered the system, either by contagion or infection, lay dormant for a period varying from 10 to 16 days, when an eruption made its appearance on the skin of the animal, in those parts of the body more particularly where there was the least wool, as in the inner part of the thighs and arms; without, however, being long confined to those parts, but soon extending to other parts of the body. This eruption is found on examination to consist of hard knotty bodies, much inflamed, and of a florid red colour; some of them separate from the rest, while others are accumulated in clusters. It was only when the eruption made its appearance that the animal gave any symptoms of ill health. On the eruption, however, taking place, the sheep separated itself from the flock, drooped the head, hung down the ears, and altogether presented a most peculiar and dejected appearance; the feet and ears being cold while the rest of the body was feverish; the eye-lids became inflamed and swollen, with discharge of tears from the eyes, and mucus from the nostrils. The animal refused its food, and the symptoms went on increasing in severity for three or four days, until the eruption changed its character and assumed a white appearance, arising from the cuticle being raised from the nodules by effusion of the fluid beneath it; at this stage of the disease the animal at once seemed slightly relieved. The white raised cuticle, however, in the course of a few days, put on a brown hue, and became converted in its substance into a scab or crust, which ultimately fell off, leaving an ulcer more or less deep in the flesh, and occasioning those pitted marks so well known as resulting in the human subject from a late and severe attack of small-pox. The danger to the animal suffering under this disease is dependent on the amount of the eruption present, and also upon the irregularity with which it passes through its various stages; and he agreed with those who recommended a stimulating and nutritive plan of treatment. Prof. Simonds had no confidence in vaccination (with cow pock) for this disease in the sheep, nor did he believe it could be depended upon as a preventive, however it might be hereafter proved to be of use in mitigating its virulence. He had himself vaccinated sheep, and subsequently inoculated them; in the course of time the inoculation took effect, and the small-pox appeared and passed through its regular stages. He considered inoculation to be the best means of diminishing the virulent character of the disease: and that this plan might be had recourse to even when the disease had shown itself in the flock; especial care being taken to procure lymph from the mildest cases, and to introduce it with the least possible incision, which ought not to penetrate deeply through the skin, but be introduced underneath it, with not more than two slight punctures, behind the ear, as had been suggested, or inside the thigh of the animal. He stated that great care was requisite in effecting this operation, otherwise, if deep punctures were made, a deep sloughing and ulcers would invariably ensue. He recommended, as another preventive, that the unhealthy sheep should be separated from the healthy ones; and also, that a daily examination should be made of the animals presumed to be healthy, in order that an instant removal might be made of any showing the slightest symptoms of disease. With regard to the skins of sheep dying of small-pox, he earnestly recommended their being destroyed by fire or deep burial in the ground; for it had been ascertained that the virus retained its fatal powers long after the death of the animal, and might again become the origin of fresh contagion.—Sir John Tyrell and Mr. Milward thought that the most serious difficulty in the case of the present disease was the fact of the simultaneous development, to which Professor Simonds

had alluded, of the external local symptoms with the constitutional derangement of the animal; as sheep newly purchased might be tainted with the disease for nearly a fortnight before the owner would be aware of their diseased condition: but that, although the authorities of towns, under such circumstances, could not be able to exclude such sheep from their markets, they thought them, on the other hand, only more strongly bound, for the public safety, to take measures for at once rejecting animals in which disease had actually developed itself. The Council expressed to Professor Simonds their acknowledgments of the favour he had done them by his attendance on that occasion, and the valuable information he had communicated on the important subject of their discussion that day.

Miscellaneous Communications.—Sir John W. Lubbock, Bart., of High Elms, near Farnborough, Kent, transmitted to the Council a statement of the experiments in which he was engaged on the trial of different artificial manures and their mixtures, on plots of ground of a quarter of an acre each; and, as his residence was only 15 miles distant from London, he invited the attendance of any of the members of the Society who would favour him with their visit of inspection. On the motion of Mr. Fisher Hobbs, the best thanks of the Council were voted to Sir John Lubbock for this communication and invitation; with a request that he would make a farther report to the Council of any results he might obtain from the interesting series of experiments in which he was engaged.—Mr. C. H. Crewe, of the Hayes, near Derby, favoured the Council with experiments on the thin-sowing of wheat and oats upon his farm this year.—Mr. Paul, of Rougham, Norfolk, expressed his willingness to deliver a Lecture on Agricultural Chemistry before the members of the Society.

Presents.—The Earl of Yarborough presented Mr. Sidney's work on the Railways and Agriculture of North Lincolnshire; the Hon. East India Court of Directors, the Meteorological Observations made at Madras, 1841-5; Mr. Fisher Hobbs, the cheap broad-sheet edition of the Agriculturist's Calendar from Tusser's Points of Good Husbandry; Mr. Chadwick, the first and second reports of the Metropolitan Sanitary Commission; Mr. Charnock, his paper on Land Drainage, read before the Wakefield Farmers' Club; and Mr. G. Darby, M.P., a Markby draining spade; for which, and other presents made to the Society, the Council ordered their best thanks.

Notices and Suggestions.—Notices of motion, and suggestions for future consideration, in reference to the details of the Norwich meeting, were received from the Duke of Richmond, Lord Portman, Colonel Challoner, Mr. Raymond Barker, and Mr. Milward, and an entry of them ordered for reference at subsequent meetings of the Council and general Norwich Committee.

The Council then adjourned to Tuesday, the 1st of August.

A Monthly Council was held at the Society's House, in Hanover-square, on Tuesday, the 1st of August. The following Members of Council and Governors were present: The Earl of Chichester, President, in the chair; Hon. Captain Dudley Pelham, R.N.; Sir John V. B. Johnstone, Bart., M.P.; Mr. Raymond Barker; Mr. Blanshard; Mr. Bramston, M.P.; Mr. Burke; Colonel Challoner; Mr. Childers, M.P.; Mr. Druce; Mr. Grantham; Mr. Hamond; Mr. Harvey; Mr. Fisher Hobbs; Mr. Hudson, Castleacre; Mr. Kinder; Mr. Lawes; Mr. Milward; Mr. Pusey, M.P.; Professor Sewell; Mr. Shaw, Northampton; Mr. Shelley; Mr. Thompson; Mr. Thomas Turner; and Mr. Jonas Webb.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, presented to the Council the report of the committee on the accounts of the Society for the month just ended, made up to the previous day; as well as their statements of the funded property of the Society, and the payments and liabilities on current account, during the past quarter. It appeared from this report that the current cash balance in the hands of the Society's bankers in London on the last day of July was £1,201, and that in the hands of the Society's local bankers at York £1,178; the gross balance amounting to £2,379 (of which the following sums belonged to special heads for investment, namely, arrears of subscription, £135; and life compositions, £501), while, on the other hand, it also appeared that the following were the claims, at that date, on the funds of the Society, amounting to £3,845, namely:—

Prizes awarded at the York meeting.....	£1710	0	0
Judges and consulting engineer, do.....	384	0	0
Contracts for works (balance), do.....	738	0	0
Lectures (in London and at York)	68	0	0
Pavilion dinner at the York meeting.....	540	0	0
Force-resister and indicator, do.....	38	0	0
Advertisement (balance), do	84	0	0
Printing, tickets, stamps, and badges, do..	91	0	0
Salaries of secretary, clerks, and porter ..	177	0	0
Miscellaneous items	15	0	0
	£3845	0	0

the difference between the cash in hand and the claims at that time upon the Society being £1,466. To meet this deficiency three courses had presented themselves to the Committee:

1. To address a letter to each member in arrear of subscription, and await the receipt of a supply of funds in the ordinary course.

2. To realize the amount by sale of a part of the invested capital of the Society at present standing in the names of the Trustees of the Society.

3. To apply to Messrs. Drummond, the Bankers of the Society, and request them to place the sum of £1500 to the credit of the Society at their usual rate of interest, for a period of three months.

This last course was unanimously adopted by the Council on the recommendation of the Finance Committee.

Mr. Barker then proceeded to explain how this dilemma had occurred in the funds of the Society after so successful a Country Meeting as that just held at York. He stated that it had entirely arisen from the fact that more than one-half of the members of the Society had omitted to pay their subscriptions for the

current year, and that the following was the state of the arrears generally at the present date remaining unpaid to the funds of the Society, while all the expenditure had to be made on the foundation that such anticipated income would in all good faith be forthcoming at the respective dates of becoming due:

Arrears of Subscriptions owing for the yrs.	1843 to 1847..	£1545
Ditto ditto	1844 to 1847..	976
Ditto ditto	1845 to 1847..	672
Ditto ditto	1846 to 1847..	366
Ditto for the year	1847	516
Ditto for the year	1848	3938
		£8013

The Council, he thought, would be fully aware that so large a debt due to the Society as this amount of arrears, unpaid by no less than 56 of their governors and 3,658 of their members, would effectually tend to embarrass the affairs of the Society so long as such an obstacle was allowed to exist; and he trusted that this public announcement of the circumstance would have the effect of calling the attention of the parties in arrear to the circumstance, and of impressing upon them the serious inconvenience arising from the omission.—The Report of the Finance Committee was then unanimously adopted.

Mr. Shelley gave notice of the following motion for the next Monthly Council, to be held on the 7th of November, namely—"That in future no journal of the Society be sent to a member who has not paid his subscription for the current year; and that a list of members of the Society who are six months in arrear of subscription be put up in the Council Room in Hanover-square; and that notice in writing be sent to each member whose name may appear on the list, giving him intimation thereof."

Prize Essays.—Mr. Pusey, M.P., chairman of the Journal Committee, reported the mottoes of two essays to which the judges had awarded the respective prizes offered by the Society. The sealed motto-papers, containing the names of the successful competitors, were handed to the President, who opened them in the presence of the Council, when the following result was obtained:

1. The prize of £20, for the best Report on the use of Lime as a Manure, awarded to Thomas L. Colbeck, of East Denton, near Newcastle-upon-Tyne.

2. The prize of £50, for the best Report on the Pleuro-Pneumonia amongst Cattle, awarded to George Waters, jun. (member of the Royal College of Veterinary Surgeons), of St. Andrew's-hill, Cambridge.

Mr. Pusey, M.P., Chairman of the Journal Committee, has reported a further adjudication by the Judges in the department of Prize Essays; namely:—

The Prize of £20 for the best Account of the Management of Hops to Samuel Rutley, of West Yaldham, near Wrotham, Kent.

York Meeting.—A special recommendation was received from Messrs. Clyburn and Parsson, the engineering judges at the York Meeting, that a Silver Medal should be given to Mr. Richard Robinson, of Belfast, for his machinery and apparatus for Steeping, Breaking, and Scutching Flax, exhibited at the Society's recent Country Meeting. This recommendation was unanimously received and confirmed by the Council.

Mr. Hudson, M.P., in acknowledging, as Chairman, the vote of thanks passed to the Local Committee at York, expressed the satisfaction it would give him to do all in his power to facilitate the operations of the Society at their Norwich Meeting next year.—Letters connected with the business of the York Meeting were also received from Mr. Bates, Mr. Milburn, Mr. Eddison, Mr. Swinford, Mr. Tyson, Mr. Thomas, and Mr. Braithwaite.

Norwich Meeting.—The Council, on the motion of Mr. Thompson, agreed to the following schedule of Implement Prizes for the Norwich Meeting in 1849.

Heavy-land plough	£5	Harvest cart	£10
Light-land plough	5	Waggon	10
Plough for general purposes	5	Drain-tile machine	20
Paring plough	5	Draining tools	3
Subsoil pulverizer	5	Heavy harrow	5
Drill for general purposes	15	Light harrow	5
Corn drill	10	Norwegian harrow	5
Turnip drill (on the flat)	10	Scarifier	10
Turnip drill (on the ridge)	10	Cultivator, or grubber	10
Drop drill (seed and manure	10	Horse hoe (on the flat)	10
Manure distributor (broadcast; 2 to 20 bushels per acre)	5	Horse hoe (on the ridge)	5
Portable steam-engine	50	Horse rake	5
Second best ditto	25	Horse seed dibbler	10
Portable thrashing machine	25	Hand dibbler	3
Corn-dressing machine	10	Barrow hand-drill (to work with cups)	3
Meal-grinding mill	10	Liquid manure distributor	5
Linseed and corn crusher	5	Hay-making machine	5
Chaff-cutter	10	Gorse bruiser	5
Turnip-cutter	5	Steaming apparatus	5
Cake breaker	5	Silver Medals for miscellaneous awards and essential improvements, estimated at	26
One-horse cart	10	Total	£400

The Council also agreed to the suggestion of Mr. Thompson, that when an implement which shall have previously gained a prize in money, shall again be regarded by the judges at any Country Meeting as the best implement in its class, it shall receive the Silver Medal (instead of money); and that, should such implement, under those circumstances, have twice gained the Silver Medal, it shall be entitled, on carrying off the prize the fourth time, to the Gold Medal of the Society, as the highest mark of distinction; a regulation, however, which Mr. Thompson would not have applied to steam-engines.

Mr. Thompson gave notice, that he should move, at the Monthly Council in November, the following resolutions:—

1. That the implements in future be brought into the show-yard one day earlier, namely, on the Wednesday instead of the Thursday in the week preceding that of the meeting; in order that the stewards and judges may be enabled to make their arrangements for exhibition and trial with greater completeness.

2. That the Hon. Captain Dudley Pelham, R.N., be requested to accept the office of Steward of the Implement-yard, in the place of Mr. Shelley, who retires by rotation.

Mr. Shaw, of Northampton, also gave notice that he should move at the same date, that in future each Judge of Implements shall be appointed for two consecutive years, instead of a single year, as heretofore.

The discussions attendant on this arrangement of the Implement Prizes for the Norwich Meeting led to interesting communications of practical experience among the members present, and to a prolonged sitting.

Potato Disease.—Lord Portman favoured the Council with the following statement in reference to his Potato crop in Dorsetshire:—

"*Bryanston, July* 31, 1848.

"On the 1st of July my gardener observed the potatoes looking rather fading, and day by day found the symptoms of disease increasing. I desired him to dig those which were the most affected on the 19th and 20th; we found that one-half were too bad for the pigs to eat, and the other half sound. The hot rain set in and stopped our work. The rain ceased on the 27th, and we resumed the digging on the 28th; we then found nine-tenths rotten, and so offensive to the smell that I directed them to be buried. The remaining one-tenth were sound, and I have placed them on dry soil in long shallow heaps, and have carefully dusted them with quicklime, and covered them slightly, hoping to preserve them for food. I have heretofore tried *all* the experiments suggested, and have found all to be useless, except the plan which I have now adopted, because it alone has heretofore invariably succeeded. The disease is very bad all around me. The cottagers who planted late in the spring have quite lost their seed and labour, as the haulm is dead and the tubers not larger than marbles; but those planted in January, early in February, and in the autumn, are more valuable, because, though now entirely checked, they have attained an edible size, if they happen to be fit to eat, and may be stored with lime for future use. The crop is very large and fine, and would, but for this visitation of Providence, have given a great supply of tubers. Here we are filling the plots cleared of potatoes with turnips and cabbages. (Signed) PORTMAN."

The Council expressed to Lord Portman their best thanks for the favour of this communication.

Miscellaneous Communications.—Mr. Hamond gave notice of his intention of calling the attention of the Council at their November Monthly Meeting, to the subject of local district prizes, in connection with the Country Meetings of the Society.—Mr. Jonas communicated some observations on the value of a drop-drill in reducing, by its economical agency, the cost price of a turnip crop, an object already effected to so great an extent by the application of bones dissolved in sulphuric acid. Such a drill, however, he conceived, ought to be a complete and perfect drop-drill, dropping both manure and seed, but not both at once: first the manure, then earth, and then the seed.—The Rev. T. J. Powell, of Cantreff, offered suggestions for the more regular payment of subscriptions.

The Council then adjourned, over the autumn recess, to Tuesday, the 7th of November.

NEW MEMBERS.

Akroyd, Edward, Denton Park, Otley, Yorkshire
Barnett, Henry, Glympton-park, Woodstock, Oxon
Brown, Joseph Lyne, Beaumont Cote, Barton-on-Humber
Clonbrock, Lord, Clonbrock, Ahascragh, Ireland
Clough, John, Bootham, York
Copeman, Robert, jun., Hemsby, Great Yarmouth
Cook, Sir William B., Bart., Wheatley Hall, Yorkshire
Crompton, Joshua Samuel, Sion-hill, Thirsk, Yorkshire
Danson, Joseph, Six-shaw-street, Liverpool
Darley, Charles Albert, Stamford-bridge, York
Davie, Sir H. Ferguson, Bart., Creedy, Credition, Devon
Davy, John, Owersby, Market-Rasen, Lincolnshire
Denison, Edmund, Doncaster
Dixon, John William, Beasby, North Thoresby, Lincolnshire
Dyke, Sir Percival Hart, Bart., Lullington Castle, Kent
Fielden, Samuel, Centre Vale, Todmorden, Lancashire
Foster, John, Lingodell, Tickhill, Yorkshire
Haigh, George, Erdington, Birmingham
Lee, George, Frampton, Dorchester, Dorset
Lett, Joseph, Rushock, Kidderminster, Worcestershire
Martin, William, Scamblesley, Horncastle, Lincolnshire
Maugham, John, Dudley, Worcestershire
Murrell, William, Intwood, Norwich
Murrell, Gibbs Howes, Intwood, Norwich
Prentice, Manning, High Easter, Chelmsford
Ray, John, South Green, East Dereham, Norfolk
Roddam, John Joseph, Newton, Stanhope, Durham
Rokeby, Lord, Hazlewood, King's-Langley, Herts
Sheffield, Earl of, Sheffield Park, Uckfield, Sussex
Smythe, John Walter, Acton-Burnell, Salop
Sykes, Sir Tatton, Bart., Sledmere, Malton, Yorkshire
Tigar, Pennock, Grove House, Beverley, Yorkshire
Watson, James, Castle Meadow, Norwich
Ward, David, Welford, Suffolk
Wilkinson, Thomas A., Dring Houses, York.

WHICH IS THE MOST PROFITABLE BREED OF SHEEP?

SIR,—Which is the most profitable breed of sheep, is a question often proposed—never solved. Many are the reasons given for preference of certain breeds on behalf of different localities, and many experiments have been tried to test relative merits. These have been principally tried on equality of terms, the natural habits of the animals being left out of sight, so that the results have been pretty equally varied and unsatisfactory; no sound conclusion having as yet been arrived at. It is a subject of great interest in itself, and certainly one of vast importance to a country so thickly populated as our own happy land.

The attention of most of our enterprising and energetic agriculturists has been turned to the increased productions of our arable fields; this is perfectly right, and no one appreciates more highly the great advances made than myself. I am also well aware of the intimate connection between the two, from the increase of animal food on these arable lands; they must go hand-in-hand to a great extent; but if it can be shewn that certain animals—a particular breed of sheep, for instance—will produce a more abundant supply of food for man, or clothing for his use, *then that* is the very breed deserving most encouragement, despite of favoured prejudices. I presume not to direct: my object is to promote inquiry. I farm in a district altogether enclosed, and our fields are for the most part of convenient size. Our sheep graze undisturbed; where they feed, there they lie down, and rest in quiet. It is not so with the open field or Down farmer; his sheep travel from field to down, from down to field daily. This requires activity; he requires an animal with light, elastic tread. I say nothing of this mode of farming! Query: What is the loss sustained in fat and muscle by this weary travel? The mountain range appears to require an agile, hardy animal, but have the little animals generally found on these summits undergone all improvement of which they are capable? The bleak and elevated parts of the High Peak of Derbyshire are grazed by sheep of fair size and proportions; and the Cotswold Hills, which are about 700 feet above "sea level," boast the largest sheep in the world. I by no means question the propriety of suiting the animal to the locality or purpose required; but I do seriously object to grazing inferior animals on any pasture, country, or place, where a superior can be introduced: to this I desire to direct particular attention, as a subject of no minor importance. I hesitate to give an opinion, but as I occasionally see sheep of every variety, from the little mountain sheep to the gigantic Cotswold, fattening on our best pastures, I will say that, so far as my observation and experience go, they fatten in about the same time; indeed, with animals of the same age, the larger one generally improves the faster. He is more indisposed to exertion, resting more quietly; and in the consumption of food, the balance is not much in favour of the smaller animal: his active habits cause him to eat more, and his restless feet destroy much. I need not stay to prove that an active, lively animal will consume more food than a quiet, docile one: it is an axiom. My impression further is, that the *little* active one will consume and waste (by treading) as much or even more food than the *large*, quiet, docile one; and I invariably find the larger animal to be the quieter one. My own prepossession is in favour of a large breed of animals, as believing that they come to—*grow to*—a heavier weight in the shortest time, upon proportionably the least food. With the view of exciting discussion on these points, and consequent improvement, I send you the following dimensions of sheep taken at the late York meeting. I withhold the numbers at least for the present, as I have no wish to come into collision with individual exhibitors. The whole were fairly and carefully taken before the prizes were declared, and in utter ignorance as to whom each animal belonged. I would further say, that I had ample time to make my selection, which, with two or three exceptions, were the largest sheep in each class.

ADMEASUREMENT OF SHEEP IN CLASS AT YORK MEETING, TAKEN BEFORE THE PRIZES WERE DECLARED:—

Breed.	Class.	Age.	Girth.	Length.	Height.
		months	ft. in.	ft. in.	ft. in.
LONG-WOOLS	No. 1	16	5 1	3 8½	2 6½
		16	4 8½	3 6	2 6
		16	4 9½	3 7	2 6
		16	4 8	3 7½	2 5½
	No. 2	40	5 7	4 0½	2 9¼
		52	5 7½	4 1½	2 8½
		28	5 4	3 11	2 7½
LEICESTERS	No. 1	16½	4 4	3 6½	2 5¼
		15	4 2	3 5	2 4½
		16	4 6½	3 5½	2 5
		14	4 6½	3 7½	2 6¾
		16	4 4½	3 6½	2 5
		16	4 5½	3 7	2 6
		16	4 3½	3 4½	2 4½
	No. 2	27	5 2	3 9	2 5¼
		39	4 11	3 9	2 5½
		40	4 11	3 7	2 6½
		55	5 1½	3 8½	2 6
		27	4 8½	3 8½	2 5½
		28	4 9	3 6½	2 3½
		28	5 1	3 9	2 6½
		28	5 0	3 6½	2 7
SOUTHDOWNS	No. 1	16	3 10	3 10	2 2¼
		16	3 8½	3 7½	2 2½
		16	4 1	3 7	2 3½
		16	4 0	3 9	2 3
	No. 2	55	4 5	3 11	2 3½
		29	4 0	3 9	2 3
		29	4 6	4 1	2 4
		40	4 1	3 9	2 2½

I give you my estimate of the comparative weight of the heaviest sheep in each class of same age, according to my judgment:—

Breed.	Class.	Age.	Weight per quarter.	Wool.
		months.	lbs.	lbs.
Long-wools....	No. 1	16	52	14
Leicesters	„ 1	16	46	11
Southdowns ..	„ 1	16	36	8
Long-wools....	„ 2	40	72	15
Leicesters	„ 2	40	56	11
Southdowns ..	„ 2	40	46	8

With all deference I beg to say, that in the Leicester classes nearly every variety of Leicesters and long-wools was to be found; the pure Leicesters not predominating, and the long-wool classes embraced a very superior Cheviot, &c.

I am, your obedient servant, J. C.

Long Sutton, August 1.

—Mark Lane Express.

THE TITHE COMMISSION.

The following is a copy of the report of the Tithe Commissioners to Sir G. Grey, M.P.:—

"Tithe Commission Office, July 8, 1848.

"Sir—It is our duty to report to you the progress of the commutation of the tithes in England and Wales to the close of the year 1847.

"We have received notices that voluntary proceedings have commenced in 9,631 tithe districts; of these notices, four were received during the year 1847.

"We have received 7,053 agreements, and confirmed 6,753; of these, nine have been received and four confirmed during the year 1847.

"6,424 notices for making awards have been issued, of which 352 were issued during the year 1847.

"We have received 4,847 draughts of compulsory awards, and confirmed 4,332; of these 377 have been received and 454 have been confirmed during the year 1847.

"We have received 10,173 apportionments, and confirmed 9,860; of those 608 have been received and 598 confirmed during the year 1847.

"In 11,085 tithe districts, as will be seen from the above statement, the rent-charges to be hereafter paid have been finally established by confirmed agreements or confirmed awards.

"We have in our possession agreements and draughts of awards as yet unconfirmed which will include 815 additional tithe districts, and make a total, when completed, of 11,900 districts in which the tithes have been commuted.

"299 altered apportionments were made by the Tithe Commissioners up to the 31st December, 1847, of which 212 were confirmed.

"At that date exchange of glebe lands were effected in 169 places, and 51 such exchanges were in progress.

"At the close of 1847 we had confirmed 8,260 distinct mergers of tithe. A considerable body of tithe had also been merged by parochial agreements.

"We have to report the assurance which we have happily been able to give in all our former reports, that the processes of commutation are going on, on the whole, tranquilly and satisfactorily.

"We have adverted in four former reports to the state of the law, under what is called Lord Tenterden's Act.

"Although the law is not yet formally declared, an approach to a decision has taken place; that is, the Barons of the Exchequer have given a certificate of the opinion of their Court on a case submitted to it by the Lord Chancellor; on that certificate we thought it best to proceed at once without waiting for its ultimate confirmation.

"Some inconvenience may, perhaps, result from this, but we think it obvious that much more intolerable inconvenience would be caused from our delaying still further our own decisions. We have, &c.,

"T. Wentworth Buller.
"William Blamire.
"Richard Jones.

"To the Right Hon. Sir George Grey, M.P., &c."

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

A meeting of noblemen, gentlemen, and others, was held on the 28th July, in the Hopetoun Rooms, Queen-street. The Duke of Montrose was in the chair.

The Chairman said that the Chemistry Association, which was partly instituted under the sanction of the Highland Society, was about to expire, and it had been thought desirable by the directors of the Highland Society that they should rather have a chemical department attached to the society, than that there should be a separate institution. That resolution of the directors had been made known to a general meeting of the members of the Highland Society, and approved of; but the question remained, how were the funds to be raised for the purpose of meeting the expenses of such a department? At first it was thought that it would not be necessary or proper to give any large sum of money for this purpose; but, on a mature examination of the subject, the directors, and those of the members who were present at the general meeting, came to the conclusion that it would be impossible to institute a chemical department on a satisfactory footing, or to derive any considerable advantage from it, unless they had funds sufficient to enable the directors to carry it out properly, and that the directors should not be cramped in regard to the funds at their disposal. The subject, therefore, had been more maturely considered since the general meeting by the directors, and it was for the purpose of calling the attention of the society at large to the intention they had of instituting a chemical department, and of endeavouring to make it as efficient as possible, by securing the services of the most efficient person that could be found, and to impress upon the members of the society the necessity of their finding means sufficient for the proper carrying out of that object, that the present meeting had been called. The first idea was, that a small addition to the annual subscription of members of the society would be the easiest mode of obtaining those funds; but it was now thought that there should be a separate subscription for the establishment of a chemical department; and with that view the directors proposed that local committees should be formed in the different districts of Scotland, for the purpose of obtaining those subscriptions. The noble chairman concluded by expressing a hope that all present would forward the subscriptions to their utmost ability.

The Duke of Buccleuch, in moving the first resolution, said that it was now a good many years ago since the attention of the members of the Highland Society, and of the public generally, was first called to the application of the science of chemistry to the purposes of agriculture. Their object was, at the least cost, to produce the largest return; and he thought that that object would be greatly promoted by the establishment of a chemical department in connection with the Highland Society. The Chemistry Association hitherto had been separate from the Highland Society, although a large proportion of its members were also members of the Highland Society; but he thought that it would be more conducive to the general interest were the one now merged into the other. Holding these views, he had therefore great pleasure in moving, "That the meeting, impressed with the great importance of chemistry, and its application to agriculture, approve of the proposed establishment of a chemical department, under the cognizance of this society, and would press upon the agriculturists of Scotland the necessity of extending their support to this department."

Mr. John Finnie, farmer, Swanston, in seconding the resolution, said, I most reluctantly obtrude myself on the time and notice of this meeting, but, being a practical farmer, I trust I may be excused for offering a remark or two while a matter is under discussion about what concerns so intimately that art. When, in 1842, I felt so strongly that the time had come when the experiment ought to be made, in how far the services of an analytic chemist would prove of importance to the successful progression of agriculture, I ventured to submit

to the directors of the Highland Society a scheme for the appointment of a chemist, whose services would be available to the agricultural community; and I shall not disguise the fact, that I experienced serious disappointment when I understood that, consistently with a sense of duty, they could not do more at that time than afford the promoters of any such scheme their patronage. Sometimes, however, defeat in an honourable cause rather tends to redoubled perseverance, and so it proved; for my brother farmers who so heartily joined with me, determined upon fresh exertions; and, having obtained the assistance and patronage of many noblemen and gentlemen, we had the satisfaction of soon witnessing the establishment of the Agricultural Chemistry Association of Scotland. I shall not say one word as to the reasons that induced myself, with much regret, as well as others of my brother farmers, afterwards to secede from it; but this I shall say, that the noblemen and gentlemen who so handsomely gave their support at its commencement, are entitled to our lasting gratitude. My lord, at the commencement of the Agricultural Chemistry Association, the duty devolved upon me to communicate verbally and in writing with, I may say, the largest proportion of the landlords and tenants of Scotland, and from the former, but more particularly the latter, I had a most unequivocal expression of surprise that the Highland Society had not undertaken a project fraught with so much importance to the agricultural community; and had it not been for the argument I used, and most sincerely at the time, that by-and-bye it could not fail to become part and parcel of the society's business, I would not have obtained the same number of subscribers to the association that I did; and I am sure the noble lord (Dunfermline) will excuse my asking him to corroborate the statement I now make—that in the anxious consultations I had with that nobleman, we from the first, and as long as we had the honour of being of the committee of management, anticipated that it would merge into the Highland Society. My lord, since now, not only my own anticipations have been realized and fully met—recollecting as I do the sacrifice of time, and even money, I then made personally in order to secure for agriculturists the services of a chemist, but likewise the then expressed opinion of that class to which I consider it an honour and privilege to belong—should I and they shrink now—should it be at the eleventh hour, to hail with satisfaction an admittedly important step taken by an institution having for its object the progression of agriculture, which may be so well termed the backbone of Britain's strength and stability? My lord, whether the beauty of Scotland can lay any claim to the eulogiums that have been passed upon it, it is not for me to say; but this I may state, that men, skill, enterprise, and capital have not been wanting in increasing and maintaining the value of land in Scotland; and while I value highly the important benefits that have resulted from the past services of the Highland and Agricultural Society to the cause of agriculture, I cannot, without compromising the interests of that class to which I belong, do less than state that they have a legitimate claim on the Highland Society from the step it has now taken—a claim enhanced not only in consideration of the responsible character it so justly has of furthering and directing the agricultural enterprise of Scotland, but inasmuch as from the deserved status it now holds among the other institutions of Europe, and the influence it can so powerfully exert—it, and it alone, is the only certain medium through which the present generation of farmers are likely to have the art they practise tested by the same all-powerful auxiliary that has raised to pre-eminence the other arts in the country. In thus appealing, as I am doing, on behalf of the agriculturists of Scotland, I do not refuse to admit that the principal part of the burden of maintaining a chemist is to fall on the landed proprietors; but this, I know, will not be gravely disputed by them: not only in consideration that our interest in the land stands second to theirs, but more especially when they reflect on the vast extent of land throughout Scotland now dependent on artificial manures, and the vast importance, and, comparatively speaking, perfect security given to their tenants, by affording them an opportunity of testing such fertilizing substances before application, and not leaving them to the mercy of every quack manufacturer of manures in the country. This consideration alone, I humbly conceive, is enough to warrant (and that totally independent of the discoveries which, in so enlightened an age, I would be the last to say we are not entitled to calculate upon) an expenditure of ten times the amount that will be required by the Highland Society for the object this meeting has met to consider. And in illustration, I would just beg to refer to what the Chemistry Association, during its curriculum of five years, has accomplished in this respect. But, my lord, we do not intend that the landed proprietors should go single handed in this matter. We, the farmers, are prepared to join hand-in-hand with them in the noble and praiseworthy attempt to increase the fertility of the soil, by not only ordinary, but by extraordinary means; and thus, in harmony with our landlords, maintain that position among the other members of the community, we have so happily attained. And in proof of what I have now stated, allow me to refer this meeting to the number of tenant-farmers that appeared in the list of members admitted at the last general meeting, and let such be received by the directors and supporters of this society as a pledge of the confidence they enjoy while pursuing the course they are doing; and that the Highland Society is still looked to as their determined rallying point in all succeeding attempts to benefit Scotch agriculture. In conclusion, with the view of inducing agriculturists to acquire a higher standard of intelligence, we, the practical farmers, hail that as an additional proof that the Highland Society is, in reality, what it has professed to be—the devoted parent of agriculture.

The Earl of HADDINGTON moved the appointment of a long list of local committees, for the purpose pointed out in the chairman's address, which was seconded by Mr. Campbell, of Craigie, and unanimously agreed to.

Sir C. S. FORBES moved, and Mr. Colquhoun, of Killermont, seconded a vote of thanks to the office-bearers and other members of the Agricultural Chemistry Association, for having first brought the subject before the agricultural community of Scotland, and for their exertions in connection therewith.

Mr. Alexander, of Ballochmyle, made a few appropriate remarks in reply.

After the usual compliment to the chairman the meeting separated.—North British Daily Mail.

TESTIMONIAL TO MR. SELMES. — We have much pleasure in publicly announcing that Samuel Selmes, Esq., of Knelle, Beckley, is shortly to be presented with a substantial memento on his retiring from business, to testify to him the esteem entertained of his public and private worth as an enterprising agriculturist. Much might be said of the exertions of Mr. Selmes in improving the system of farming and breeding cattle; and no person, especially in this part of Sussex, has endeared himself by his urbanity of manners,

and withal his business deportment, more than Mr. Selmes. A long and active life has brought him into the personal knowledge of many of the influential landed proprietors and farmers of the kingdom, and it must be a source of gratification to Mr. Selmes to find that he has by a course of honourable exertions, consistent with the successful conduct of his pursuits in life, secured the spontaneous sentiments of esteem not only of those in a similar occupation to himself, but of others who have witnessed and have been interested in the business in which he has been engaged. Mr. Selmes has already received testimonials of esteem and admiration of his character as an agriculturist, but we are sure that the memorial about to be presented to him will, in its origin, promotion, and completion, be of that kind, and demonstrate such sentiments, as cannot fail to stimulate those feelings which are in every way worthy of him, his character, and his name.—Sussex Express.

GREAT SHOW OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND, AT EDINBURGH.

The great Agricultural Meeting and General Show of Live Stock, Implements of Husbandry, &c., of the Highland and Agricultural Society, commenced on Wednesday, August 2nd, on the ground adjoining the Queensferry Road, about half-a-mile from the western part of the city. The show on this occasion has excited deep and general interest, and from the skill and enterprise of the farmers of the Lothians, and the facilities of conveyance afforded by the various lines of railway, the display in the various branches of rural economy is expected to surpass the former exhibitions of the society.

The entries of stock for the present show are very numerous, and, with the single exception of the show at Glasgow in 1845, exceed those of any previous occasion. The number of cattle entered amounts to 352; sheep, 764; horses, 141; swine, 58; and poultry, 130—in all, 1,445. The various lines of railway throughout the country have generally acted with the utmost liberality, and special trains for the conveyance of stock are to be provided; while by the same means, the influx of visitors from the country is expected to be very great.

EXHIBITION OF DAIRY PRODUCE AND IMPLEMENTS.

The exhibition of dairy produce and implements of husbandry took place on Wednesday, and the day being fine, the attendance of visitors was numerous, who seemed to derive much gratification from the show. The entries of dairy produce amounted to 170, and the competition was very large, and the quality superior; and it was stated that the judges had experienced some difficulty in awarding the premiums from that circumstance. The exhibitors included many from distant parts of the country, and this department of the show gave general satisfaction.

The entries of implements amounted to 310, and the exposers to 92, which was considered to be a highly creditable display. Some of the articles had been sent from England, and a few from Ireland, but the principal portion of them were the result of the ingenuity and enterprise of our own country.

Among the implements which attracted general notice, was Clayton's patent tile machine, which obtained the first prize at the recent show, in Kilkenny, of the Royal Agricultural Society of Ireland. The machine is wholly made of iron, and amongst the advantages it is alleged to possess, is that of freeing or separating the clay from stones and other extraneous substances. It was in frequent operation during the day, and the various processes in the manufacture of tiles, &c., were witnessed with much interest by numerous groups of spectators. A tile machine, of a different construction, was exhibited as the invention of Mr. James Smith, of Deanston, for making drain-pipes from peat moss, and its practicability and uses were tested by repeated experiments. Mr. John Young, Ayr, exhibited a pipe and tile-making machine of extreme simplicity, which excited general notice; as did also those exhibited by the Ainslie Tile Company, R. Garret and Son, Saxmundham, and many others. The ground in the middle of the day presented a very animated appearance from the operation of these machines, the merits of which were freely criticised by the groups that surrounded them.

The implements exhibited by Mr. William Crosskill, Beverley, were numerous, and varied in their uses and construction. Among them was a liquid manure cart for distributing either broadcast or four rows at once, which was made the object of very general inspection. A dressing-fan, by the same exhibitor, likewise excited some notice, as did also some other articles of the same kind by Mr. R. Law, Shettleston, Glasgow, and others.

A large machine, described as an improvement on the thrashing machine, attracted very general notice, and is the construction of Mr. D. Craig, Stewarton.

THURSDAY.

The exhibition was presented on a scale of such magnitude, that it is difficult to enumerate the various items in a summary. The short-horned breed of cattle mustered in great force, as might have been expected from the great success with which they are reared in the district of country around Edinburgh. The animal belonging to Mr. Hopper, of Newham Grange, which took the first prize, was a rare beauty, though a big one. The owner said she cost him 350 guineas, and "she had since risen so much in his estimation that money would not buy her." The oxen of this breed were really splendid. Their breadth of back was so extensive that one might dance the Highland Fling upon it, without any risk of falling over the side.

The Ayrshire breed was well represented at the show. Three magnificent three-year-old oxen, exhibited by Mr.

Hope Johnstone, of Annandale, attracted much attention, as being the produce of one cow.

The animals of the Galloway breed were very creditable in appearance, but few in number—there being only six bulls and seven cows shown. But this paucity is not surprising, for the breed is not indigenous to the Lothians, or the neighbouring counties north of Queensferry. To see the Galloways as they should be seen, one must attend a meeting of the Highland Society at Dumfries, which is the head quarters, so far as cattle are concerned, for the Stewartry of Kircudbright and shire of Wigtown, where only this breed is found in its purity.

We were somewhat surprised to see the Highland cattle turn out so strong, considering that the district lies so much out of the way of their congenial soil. The Highland oxen attracted much attention, and it was surprising to many that this restless, ill-natured Celtic breed—the flesh of which commands the top price at Smithfield—could have the patience to lay on so much compact fat.

Amongst the extra stock, the Earl of Rosslyn exhibited a fine bull of the Alderney breed, from Dysart House, in Fifeshire. It was much admired. Sir John Orde, of Kilmory (or Lochfyne), exhibited an Indian bull and cow, the former nine years old. They are small in size, and each supplied with a formidable hump on the shoulder.

The stock of competing horses was perhaps the finest that the society has ever brought together on one field. In the class of draught horses, no fewer than 33 stallions were shown, almost all of great bone, splendid action, and fine symmetry. They were representatives of the fine old Flemish horse, transplanted to Clydesdale by a former Marquis of Hamilton, and subsequently improved in beauty, power, and docility, as far almost as the care and kindness of man can do.

The sheep exhibitors mustered in mighty strength, and we believe finer specimens of the Leicester breed were never seen. There were 37 tups shown in this class, not a few of them from the north of England.

The following is the award of the judges abridged :—

CLASS I.—CATTLE.

SHORT-HORNED BREED.

For the best bull of any age—the premium of thirty sovereigns to William and Francis Parker, Yarnwath Hall, Penrith, Cumberland. For the second best ditto—the premium of twenty sovereigns to Mark S. Stewart, of Southwick, Kircudbright.

For the best bull, calved after 1st January, 1847—the premium of fifteen sovereigns to Thos. Chrisp, Hawkhill, Alnwick, Northumberland.

For the best cow of any age—the premium of fifteen sovs. to John Mason Hooper, Newham Grange, Stockton-on-Tees, county Durham.

For the best pair of heifers, calved after 1st January, 1847—the premium of ten sovereigns to Nicol Milne, of Faldonside, Roxburgshire. For the second best ditto—the premium of five sovereigns to W. D. Carruthers, of Dormont, Dumfries-shire.

For the best pair of oxen, calved after 1st January, 1846—the premium of ten sovereigns to Robert Dudgeon, of Humbie, Kirkliston.

AYRSHIRE BREED.

For the best bull of any age—the premium of twenty sovereigns to Robert Paton, Clober Hill, Partick, Glasgow.

For the best bull, calved after 1st January, 1847—the premium of ten sovereigns to William Orr, Mains of Houston, Renfrew.

For the best cow of any age—the premium of ten sovereigns to A. W. Buttery, Monkland Iron Works, Airdrie.

For the best pair of heifers, calved after 1st January, 1846—the premium of ten sovereigns to Andw. M'Gregor, Ditton, Kilmarnock.

GALLOWAY BREED.

For the best bull of any age—the premium of twenty sovereigns to Walter Carruthers, Kirkhill, Moffatt. For the second best ditto—the premium of fifteen sovereigns to W. R. Ramsey, of Barnton, The Hatton, Stirling. For the third best ditto—the silver medal to William Sproat, Borness, Kircudbright.

The silver medal to Mr. Graham, Riggfoot, as the breeder of the best bull.

For the best cow of any age—the premium of ten sovereigns to John Palmer, Hallflat, Scaleby, Carlisle. For the second best ditto—the premium of five sovereigns to James Gillespie, Annan Bank, Moffat. For the third best ditto—the silver medal to Alexander Craig, Craigton, Golspie.

For the best pair of heifers, calved after 1st January, 1848—the premium of ten sovereigns to Walter M'Cullock, Kirkclaugh, Gatehouse. For the second best ditto, the premium of five sovereigns to Wiliam Sproat, Borness, Kircudbright. For the third best ditto—the silver medal to Alexander Craig, Craigton, Golspie.

For the best pair of oxen, calved after 1st January, 1845—the premium of ten sovereigns to Robert Dudgeon, Humbie, Kirkliston. For the second best ditto—the premium of five sovereigns to W. R. Ramsey, of Barnton, The Hatton, Stirlingshire. For the third best ditto—the silver medal to Robert Dudgeon, Humbie, Kirkliston.

POLLED ANGUS AND ABERDEENSHIRE BREEDS.

For the best bull of any age—the premium of twenty sovereigns to Hugh Watson, Keillor, Coupar-Angus.

For the best cow of any age—the premium of ten sovereigns to Wm. MacCombie, Tillyfour, Alford, Aberdeen.

For the best pair of heifers, calved after 1st January, 1846—the premium of ten sovereigns to William MacCombie, Tillyfour.

For the best pair of oxen, calved after 1st January, 1845—the premium of ten sovereigns to William MacCombie, Tillyfour.

HIGHLAND BREED.

For the best bull of any age—the premium of twenty sovereigns to Duncan M'Naughton, Cashlie, Footingal, Perthshire.

For the best cow of any age—the premium of ten sovereigns to William Grant Ruthven, Tomintoul, Banffshire.

For the best lot of four heifers, calved after 1st January, 1846—the premium of ten sovereigns to his Grace the Duke of Sutherland, Dunrobin.

For the best pair of oxen, calved after 1st January, 1844—the premium of ten sovereigns to George Knowles, Aberdeen.

For the best pair of oxen, calved after 1st January, 1845—the premium of ten sovereigns to his Grace the Duke of Sutherland, Dunrobin.

CLASS II.—DRAUGHT HORSES.

For the best stallion—the premium of thirty sovereigns to Samuel Clark, Mauswerie, Kilbarchan, Renfrew.

For the best mare for breeding—the premium of fifteen sovereigns to Robt. Findlay, Springhill, Billieston, Glasgow.

For the best entire colt, not exceeding two years old—the premium of fifteen sovereigns to Gabriel Dunlop, Peacockbank, Stewarton, Ayr.

For the best filly—the premium of ten sovereigns to Allan Pollok, yr. of Faside, Broomhouse, Glasgow.

CLASS III.—SHEEP.

LEICESTER BREED.

For the best tup, not exceeding forty-five months old—the premium of ten sovereigns to Thomas Cockburn, Sisterpath, Dunse.

For the best shearling tup—the premium of ten sovereigns to William Smith, New Learmouth.

For the best pen of five ewes—the premium of eight sovereigns to A. H. Wilson, The Abbey, Wigton, Cumberland.

For the best pen of five shearling ewes—the premium of five sovereigns to John Dinning, Newlands, Belford.

CHEVIOT BREED.

For the best tup, not exceeding forty-five months old—the premium of ten sovereigns to Jas. Brydon, Moodlaw, Langholm. For the second best ditto—the premium of five sovereigns to William Aitchison, of Lindhope. For the third best ditto—the silver medal to William Aitchison, of Lindhope.

For the best dinmont or shearling tup—the premium of ten sovereigns to John Dodd, Catcleuch, Northumberland. For the second best ditto—the premium of five sovereigns to Thomas Borthwick, of Hopsrig, Dumfries-shire. For the third best ditto—the silver medal to Walter Carruthers, Kirkhill, Dumfries.

For the best pen of five ewes, not exceeding five years old—the premium of five sovereigns to Thomas C. Borthwick, of Hopsrig. For the second best ditto—the premium of three sovereigns to Jas. Brydon, Moodlaw. For the third best ditto—the silver medal to Thomas Elliot, Hindhope, Roxburghshire.

For the best pen of five gimmers—the premium of five sovereigns to James Brydon, Moodlaw. For the second best ditto—the premium of three sovereigns to Thomas C. Borthwick, of Hopsrig. For the third best ditto—the silver medal to Jas. Brydon, Moodlaw.

For the best pen of five two-year-old wethers—the premium of five sovereigns to J. J. Hope Johnstone, of Annandale, Raehills. For the second best ditto—the premium of three sovereigns to Thomas Elliot, Hindhope. For the third best ditto—the silver medal to Alexander Craig, Craighton, Sutherlandshire.

BLACK-FACED BREED.

For the best tup, not exceeding forty-five months old—the premium of ten sovereigns to David Foyer, Knowehead, Stirlingshire. For the second best ditto—the premium of five sovereigns to Adam Blacklock, Minneygap, Moffat. For the third best ditto—the silver medal to Adam Blacklock, Minneygap.

For the best dinmont or shearling tup—the premium of ten sovereigns to Adam Blacklock, Minneygap. For the second best ditto—the premium of five sovereigns to John Watson, Nisbet, Biggar. For the third best ditto—the silver medal to Adam Blacklock, Minneygap.

For the best pen of five ewes, not exceeding five years and seven months old, selected from a regular breeding stock, not less than one hundred—the premium of five sovereigns to David Foyer, Knowehead, Stirlingshire.

For the best pen of five three-year-old wethers—the premium of five sovereigns to John Deans, Penston, Haddington.

SOUTHDOWN BREED.

For the best tup, not exceeding four years old—the premium of ten sovereigns to his Grace the Duke of Richmond, Gordon Castle.

For the best shearling tup—Do.

For the best pen of five ewes—Do.

For the best pen of five shearling wethers—the premium of ten sovereigns to James Sprot, Spott House, Haddington.

CLASS IV.—SWINE.

For the best boar, large breed—the premium of five sovereigns to A. H. Wilson, The Abbey, Wigton, Cumberland.

For the best boar, small breed—the premium of five sovereigns to Nicol Milne, of Faldonside, Melrose.

For the best sow, large breed—the premium of three sovereigns to his Grace the Duke of Buccleuch, Dalkeith Park.

For the best sow, small breed—the premium of three sovereigns to his Grace the Duke of Buccleuch, Dalkeith Park.

For the best pen of three pigs, not exceeding eight months old—the premium of three sovereigns to Daniel Gilchrist, of Ospisdale, Dornoch. For the third best ditto—the silver medal to William Muir, Hardington Mains, Biggar.

CLASS VI.—DAIRY PRODUCE.

BUTTER.

For the best sample (not less than 14lbs.) of butter, cured in 1848—the premium of five sovereigns to James Marshall, Goodcock Hill, Airdrie. For the second best ditto—the silver medal to David Watson, Snaip, Biggar.

For the best sample of fresh butter, of three rolls of 1 lb. weight each—the premium of five sovereigns to Alex. Naismith, Windlestrawlee, Edinburgh. For the third best ditto—the silver medal to John Brown, Boghall, Biggar.

CHEESE.

For the best couple of cheeses made from sweet or full milk, in 1848—the premium of five sovereigns to James M'Adam, Ingleston of Borgue, Kirkcudbright.

For the best couple of cheeses made from skim milk, in 1848—the premium of five sovereigns to Thomas Hamilton, Upper Well, Biggar. For the second best ditto—the premium of three sovereigns to William Muir, Hardington Mains, Biggar.

CLASS VIII.—EXTRA STOCK.

The judges have commended the following animals, for which premiums will afterwards be adjudged by the directors.

CATTLE.

No. 84. Belonging to W. T. Carruthers, of Dormont, Dumfries-shire.

HORSES.

No. 404. Belonging to James Tait, Smailholm Mains.

SHEEP.

No. 705. Belonging to Adam Blacklock, Minneygap, Moffat.

No. 706. Belonging to Geo. Hunter, Kirkton, Lanarkshire.

IMPLEMENTS.

Among the prizes given for implements we notice—

For the best ribbing machine for preparing a bed for grain when sown broadcast—the premium of three sovereigns to Thomas Inglis, Slack, Peebles-shire.

For the plough that produces the best surface-work for seed or for exposure, and at the same time cuts and raises the largest section of the soil in a furrow of given dimensions—the premium of three sovereigns to James Wilkie and Co., Uddingston, Glasgow.

JUDGES.

CATTLE.—SHORT-HORNED BREED.

Messrs. Thomas Charge, of Barton, Yorkshire; Wm. Torr, Riby; and Hugh Watson, Keillor, Coupar-Angus.

GALLOWAY, ANGUS, AND ABERDEENSHIRE POLLED BREEDS.

Messsrs. James B. Fernie, of Kilmux; Robert Hector, Forfarshire; Allan Pagan, Drumlanrig, Dumfries-shire.

SHEEP.—CHEVIOT BREED.

Messrs. James White, Falside, Jedburgh; James Welsh; James Oliver. Attending member, Mr. Hope Johnstone.

BLACK-FACED BREED.

Messrs. Alexander Denholm, Buitlaws, Biggar; Donald Macdonald, of Craigruie.

DAIRY PRODUCE.

Messrs. William Brown, of Greenockmains, Ayrshire; Francis Richardson, George Clark, and James Ballantine, Edinburgh.

THE DINNER.

The usual dinner, following the show, took place on Thursday in the Music Hall, which was tastefully fitted up and decorated for the occasion by Mr. Henry Scrymgeour, George-street. Covers were laid for upwards of a thousand persons, but the number present amounted only to about 500.

His Grace the Duke of Montrose, K.T., President of the Society, occupied the chair.

FRIDAY.

A meeting was held this forenoon, in the Hopetoun Rooms, at eleven o'clock, in furtherance of the Society's arrangements regarding the Agricultural Chemistry Association. The chair was occupied by his Grace the Duke of Montrose.

The Duke of BUCCLEUCH moved a resolution, which was to the effect that the meeting, being impressed with the great importance of chemistry in its application to agriculture, approve of the proposed establishment of a chemical department under the cognizance of the Society; and, therefore, earnestly call upon all the agriculturists of Scotland to give their support to the object which the Society had in view.

Mr. FINNIE, Swanston, seconded the resolution, which was carried.

The gates of the show-yard were thrown open to-day at ten o'clock; but the number of visitors who attended from that hour till the close of the exhibition at four o'clock, was small in comparison to the previous days.

The chief feature of interest, perhaps, in the proceedings of to-day, was an auction of prize stock, which took place at twelve o'clock, in a large circle formed of sheep flakes in the centre of the show-yard. The animals, we understand, brought in most instances excellent prices.

This closed the show of 1848, which was in all respects a most important one, and every way fitted to precede that interregnum consequent upon the resolution adopted by the Society, to hold its shows triennially instead of annually.

We learn that the total sum realized from admission money at the gates amounted to about £1500, of which nearly £1200 was taken on Thursday. It is calculated that there could not have been fewer than between 25,000 and 30,000 visitors in the show-yard in the course of the three days.—Dumfries Courier.

NORTH LINCOLNSHIRE AGRICULTURAL SOCIETY.

On Thursday, July 27, the exhibition of the society took place on the cattle market grounds, on the hill side of the Monks'-fields, Lincoln. The number of implements exhibited exceeded by 100 the number of any previous show; they occupied the flat ground at the base of the hill, and the cattle were disposed in prominent positions, where they could be seen from the road below, making up a very interesting spectacle.

The dinner took place at the market of the Corn-exchange, at 3 o'clock; the Earl of Yarborough presided. A magnificent silver salver was presented to P. H. Gedney, Esq.; it was thus inscribed: "Presented to Patteson Holgate Gedney, Esq., by the North Lincolnshire Agricultural Society, in testimony of their obligations for the very efficient services which for ten years he rendered to the society as their Honorary Treasurer, 1848." It is beautifully chased, and ornamented in compartments with figures of cattle, agricultural implements, &c.

JUDGES.—For Beasts: T. Beasley, Esq., of Harston; Leonard Severs, Esq., of Oliver; and John Outhwaite, Esq., of Bainessee. For Sheep and Pigs: N. C. Stone, Esq., of Rowley Fields; Wm. Heseltine, Esq., of Worlaby; and J. R. Kirkham, Esq., of Audelby. For Horses: C. Wood, Esq., of South Dalton; S. Robson, Esq., of Wyham; and W. Denham, Esq., of Derby. For Implements: W. B. Wingate, Esq., of Hareby; G. E. Marris, Esq., of Kirmond; and C. Clarke, Esq., of Aisthorpe.

From 12 to 2 o'clock, the grounds presented a most animated appearance, the fineness of the weather having attracted visitors by thousands. The prizes were adjudged as follows:—

SHORT-HORNED CATTLE.

Class 1. For the best Bull above one year old, 20*l.*, to Mr. Wm. Torr, of Aylesbury.

Class 2. For the best Bull three years old or upwards, 5*l.*, to Mr. Rd. Dudding, of Panton; second, 3*l.*, to Wm. Hutton, Esq., of Gate Burton.

Class 3. For the best two-year-old Bull, 5*l.*, to Mr. Wm.

Everatt, of Boothby Graffoe; second, 3*l.*, to James Banks Stanhope, Esq., of Revesby.

Class 4. For the best yearling bull, 5*l.*, to Wm. Hutton, Esq., of Gate Burton; second, 3*l.*, to J. B. Stanhope, Esq., of Revesby.

Class 5. For the best Bull Calf under one year old, 3*l.*, to Mr. Hy. Watson, of Walkeringham.

Class 6. For the best Cow more than four years old, 5*l.*, to Mr. John Kirkham, of Hagnaby; second, 3*l.*, to Mr. Wm. Smith, of West Rasen.

Class 7. For the best three-year-old Heifer, 5*l.*, to Mr. Wm. Smith, of West Rasen; second, 3*l.*, to Mr. John Kirkham, of Hagnaby.

Class 8. For the best two-year-old Heifer, 4*l.*, to J. B. Stanhope, Esq., of Revesby; second, 2*l.*, to the same.

Class 9. For the best one-year-old Heifer, 4*l.*, to Mr. Wm. Smith, of West Rasen; second, 2*l.*, to J. B. Stanhope, Esq.

Class 10. For the best She Calf under one year old, 3*l.*, to Mr. William Smith, of West Rasen.

SHEEP.

Class 11. For the best Ram of any age, 10*l.*, to Mr. Edwd. Clarke, of Canwick.

Class 12. For the best Shearling Ram, 7*l.*, to Mr. Percival Richardson, of Horkstow; second, 3*l.*, to Mr. Israel Brice, of Risby.

Class 13. For the best two-shear Ram, 5*l.*, to Mr. Edward Clarke, of Canwick; second, 3*l.*, to Mr. I. Brice, of Risby.

Class 14. For the best aged Ram, 5*l.*, to Mr. Edward Clarke, of Canwick; second, 3*l.*, to Mr. Israel Brice, of Risby.

Class 15. For the best Pen of Five Ewes, 5*l.*, to Mr. Walter Dudding, of Saxby.

Class 16. For the best Pen of Five Shearling Gimmers, 5*l.*, to Mr. Jas. Gunning, of Owmby.

HORSES.

Class 20. For the best Mare for breeding Hunters, &c., 7*l.*, to G. F. Heneage, Esq., of Hainton; second, 3*l.*, to Mr. W. C. Wells Clarke, of Brumby.

Class 21. For the best Mare for breeding Draught Horses, &c., 7*l.*, to Mr. Wm. Blow, of Househam; second, 3*l.*, to Mr. Jos. Bird, of Navenby.

Class 23. For the best Cart Filly, one year old, 3*l.*, to Mr. Jas. Dalton, of Fillingham.

Class 24. For the best Cart Foal, 2*l.*, to Mr. Wm. Blow, of Househam.

PIGS.

Class 25. For the best Boar, large breed, 4*l.*, to Mr. R. E. Duckering, of Barkwith; second, 2*l.*, to Mr. Benjamin Argile, of Eagle Hall.

Class 26. For the best Boar, small breed, 4*l.*, to Mr. Wm. Smith, of Hoyland Hall; second, 2*l.*, to Mr. Henry Clark, of Marton.

Class 27. For the best Sow, large breed, having had a litter since 1st March, 1848, 4*l.*, to Mr. Henry Watson, of Walkeringham; second, 2*l.*, to Mr. John Paine, of Bag Enderby.

Class 28. For the best Sow, small breed, ditto, 4*l.*, to Mr. Timothy Smith, of Hoyland Hall; second, 2*l.*, to Mr. Henry Watson, of Walkeringham.

IMPLEMENTS.

To Messrs. Barrett, Ashton, and Co., of Hull, 2*l.*, for Cambridge's patent roller; 1*l.* for a spike roller and scarifier combined; 1*l.* for an iron plough; and 1*l* for an iron scarifier.

To M. A. Y. Barrett, of Horncastle, 1*l.* for a wheat horse-hoe; 2*l.* for a one-horse cart; and 10s. for a pig trough.

To Mr. Rd. Coleman of Chelmsford, 10s. for a drag harrow and scarifier.

To Mr. Wm. Crosskill, of Beverley, 2*l.*, for a pole waggon; 1*l.* for a set of waggon wheels and axles; 1*l.* for a one-horse cart; and 10s. for an Archimedian root-washer.

To Mr. J. C. Grant, of Stamford, 10s. for a farmer's weighing machine.

To Mr. John Graves, of Aby, 10s. for a swing plough.

To Mr. Thos. Graves, of Bolingbroke, 10s. for a plough.

To Mr. W. Grounsell, of Louth, 2*l.* for a drag.

To Mr. Jas. Grounsell, of Horncastle, 10s. for a blower.

To Mr. T. Howden, of Stainfield, 1*l.* 10s., for a sheep-dipping apparatus.

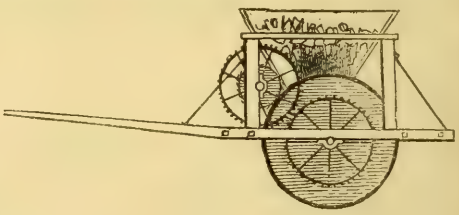
To Mr. Jas. Mumby, of Lincoln, 5*l.* for a potato crusher.

To Mr. Wm. Hunter, of Binbrook, 10s. for a blowing machine.

To Mr. Joseph Miller, of Barnetby-le-Wold, 10s. for a horse hoe.

COAL GRINDER AND SOIL PRESSER.

Charcoal would have been better known and more entensively used as a fertilizer, if the expense and inconvenience of its application had been less. It has been sufficiently tested, however, to establish the fact, that it is one of the most useful applications to the greatest variety of soils, that has ever been known; it only remains for us to get up some cheap and expeditious way of powdering and applying it; for which purpose the machine represented



in the above cut is intended. It shows a side view of a common roller for pressing the soil, with the addition of a small grooved cylinder so geared with the roller by the cog wheels represented, as to cause the surface of the roller to move much faster than that of the cylinder, thereby adding to the crushing movement that of grinding, which together pulverize the coal and drop it in front of the roller. By this operation the roller is dusted and kept free from the admission of any earth, and the coal is evenly distributed and pressed into the soil, so that the wind will not blow all the best of it away. Those who believe in applying charcoal to the surface after sowing, will see the utility of this machine.—Dean. *Lyonsdale, N. Y., April* 22, 1848.—Albany Cultivator.

REARING CALVES.

Sir,—As the rearing of calves, and bringing them forward at an early age as good beef, is an interesting subject to all engaged in farming and grazing, I am induced to make some remarks on Mr. Wm. Shaw's communication on this subject, inserted in your paper of July 31.

Although I entertain opinions somewhat different from Mr. Shaw, I do not mean it to be inferred, from what I shall now write, that I feel in any degree confident that mine are correct and his incorrect, but that I feel assured we both have but this one object in view—the wish that the subject may be so fully considered by those who are interested in it, that satisfactory conclusions may be obtained as to the most *profitable* manner (for that is the important part of the subject) of rearing and feeding cattle.

Allow me to say, that having so often declared, in my communications to you, that each would be the last, you would not have received this had I not been in a situation, to me no little mortifying, much confined to the house from a wound in my leg.

Mr. Shaw's statement, numbered 1, is thus:

1st. That if a man is so fortunate as to occupy a tract of real good grass land, and he chooses to be a grazier (or as I should call him a speculator), let him be so; *but do not connect the making of beef on grass land with farming.* The two systems are opposed to each other; the one is a stand-still do-nothing system, the other is progressive, and when connected, little or no improvement follows; as profitable grazing requires a full-grown poor animal, whereas a farmer and breeder wants a young and fat one.

As there will ever be good old feeding pastures, there there will ever be graziers who will pursue, as long as they can do so with profit, the stated *stand-still do-nothing* system of grazing. They may be termed speculators; so may every man who buys an article, and has not one immediately ready to buy it of him. Mr. Shaw says, "*do not connect the making of beef on grass land with farming.*" To have this connection has been my great desire during the great length of time I have been an occupier of land; feeling quite sure that such is for the benefit of both occupations, by taking beasts half, or three parts fat, from the grazing land, and putting them into stalls on the arable land farm to become beef of the finest quality. The occupation of a grazier cannot be called a laborious one: but here I beg to quote a passage on this subject from page 257 in the 4th edition of my book on "Practical Farming and Grazing:"—

"The knowledge requisite to carry on grazing to the greatest advantage, is not easily obtained; a man should know how beasts ought to be formed; should have a quick eye for selecting those with frame likely to produce weight; and a hand that can feel the known indications of the probability of their soon becoming fat."

2nd. That with beef at 4s. per stone live weight, there is not a profit for two men in one animal.

With present rents, and present prices of store cattle, 4s. a stone, live weight, for the best beef, will yield but a scanty profit on each beast, were there but one man to take it. No doubt it is desirable that in the purchase and sale of cattle, and all the produce of our soil, there should be no middlemen to share in the profits; but there has ever been such, and there are ever likely to be needed, in numerous cases, of buying and selling.

3rd. That the midland are pre-eminently producing counties, by which I mean breeding and feeding counties, properties which the far-famed Norfolk and Lincolnshire do not or ever will possess; *properties too valuable to be overlooked, which render them independent of, and superior to, other counties,* and require only the tempered judgment to embrace them (in proof of which I have the authority of the late excellent and ever to be remembered Earl Spencer, who stated that his young stock paid him more money per day for keeping than his feeding beasts), and the loss of which reflects a stigma on the system that reduces them to be dependent on the chance overplus of other counties.

To fully enter into the whole subject contained in this statement, it would be necessary to write at greater length than I feel at this time disposed to do. It does not appear to me to be a stigma in the system of accepting in one county the overplus produce of another; for there has ever been, and will ever continue to be, an overplus of grain and cattle in some of our counties, which overplus will ever be relied on to make up that amount of food needed for the support of the population of some other counties. 'Tis true that our midland counties do possess advantages over some other counties; but the occupiers of the land in them are, in these enlightened times, likely best to know how they can cultivate their land, breed and rear their cattle, so as to enable them to obtain a fair living from their occupation.

4th. That the high mode of farming necessary on all large tracts of poor arable land, taken at comparatively low rents, and where they cannot breed, enables the occupier, by *making a profit on his manure,* to outbid the grazier in the store, and undersell him in the fat market, both in quality of meat and price; in proof of which, also, beef is cheaper in Smithfield from January to July than from July to Christmas.

My idea of the title *grazier,* is one who occupies a grazing farm of feeding land. I cannot clearly comprehend how the occupier of poor arable land at low rent can be enabled to out-bid the grazier in the purchase of store beasts, or to undersell him in the fat market. To be able to do this, he must be able to feed at a less cost than a grazier can, which in my idea has not yet been clearly proved.

5th. That all the grass land a farmer and breeder requires (except his mowings, which are always advantageous) is just so

much as his cows and heifers, his ewes and his theaves require to ruminate on, as breeding cattle cannot be kept too naturally.

This is a question as to the advantages to be derived from house feeding. I know where, some years ago, it was tried for all the cattle on the farm, but did not answer; still I am of opinion that there should be winter house feeding on all arable farms to the full extent that the farm is capable of, without consuming any great proportion of that valuable produce of the farm which the occupier depends on to make up his rent.

6th. That every animal intended for beef should, from the moment it is calved until it is fit for the butcher, be kept under sheds and in small yards with full ventilation, but free from excess of either heat or cold, and fed on the *best of everything the farm produces*. First, new milk (never skim—that should be given to the cow calves), then hay and cake, turnips and mangel, with oat flour saturated with linseed mucilage, and then bean ditto, mixed with ditto, also with cut clover and rye-grass, &c., but not grass the produce of old grass land.

All young animals, who derive their nourishment from their mothers, naturally get full of flesh. It is very desirable that those cattle intended for beef at early maturity should not, but as most young cattle do, lose what is called their milk flesh. It is bad policy to badly keep young cattle; it is pleasant to look at those which are kept in high condition, but how it answers as to profit to feed them as recommended, with the best of everything on the farm, those ought to best know whose practice has thus been.

For many years it has been my practice at this season to give you my idea of the state of the crops in this locality. The principal part of the layered wheat has been reaped, although not near ripe; and, from what may now be seen of the general crop, it is not expected that it will prove a full average: barley, peas, and beans certainly not. A full average of turnips, but not so of mangel wurzel, although I am fortunate enough to have a very promising crop.

It is lamentable to have to report that it is the prevailing opinion in this locality that the disease in the potato crop is likely to prove as bad as it was this time two years: I had no such idea till within the last six or seven days. The first appearance of the disease is black spots on the leaves; after this the haulm becomes black. My garden crop is bad, not so, at present, is my field crop; but it is evident that the disease is begun in the crop by the hedge side. I have had the tops cut off of part of the crop that appears not to be affected, and a layer of mould thrown by the plough over the roots; this, probably, may stop the progress of the disease, but, in my belief, must certainly stop the growth of the potatoes. Some persons think, but I do not, that the beginning of the disease is at the root.

Most unaccountable are the circumstances attending the disease in the cattle of this neighbourhood. One farmer in a village near me lost this year fourteen of his cows; some died, others became in such a state as rendered it necessary that they should be made away with. The adjoining farmer did not lose one of his cows, although the diseased ones daily passed the gate of the field where his cows were kept, and thus his often came in contact with them. Many similar circumstances having occurred, I am induced to think that there possibly may be, in some pastures, a noxious grass, or in some of the hedges a noxious plant, that may tend to promote the disease. I think there can be but little doubt but that if healthy cattle follow the bite of diseased, and thus take into their stomachs the saliva of the diseased, they cannot escape infection of the common epidemic, or of pleuro-pneumonia. It is lamentable to hear the accounts of the sheep pox, brought into this country by foreign sheep.

It is, perhaps, the best policy not to croak; but, with present appearances of crops, diseases of cattle, the disturbed state of Ireland, and the need of food being again sent there, England's present prospects are not very cheering. In the hope that they will speedily improve, I remain, yours, &c.,

C. Hillyard.

Thorpelands, near Northampton, August 8.

P.S.—Should chance bring this way any of my old friends residing at a distance, I shall be happy to show them my crops, which I fancy are fairly good, although raised on the same system I have practised for thirty years.

SALE OF SOUTHDOWNS.—The sale and letting of Mr. Harris's stock of Southdown ewes and rams was held at Hinton, near Abingdon, Berks, on Thursday, the 3rd of August. Mr. Westall, of Marlborough, was auctioneer. There were 32 lots of ewes for sale, and 50 of tups for letting and sale. A very numerous and respectable company attended, among whom we noticed General Wemyss, — Vellebois, Esq., Captain Alexander, and Messrs. Druce, Trinder, Palmer, Davy, Williams, Hobbs, Thompson, Edmonds, Christy, &c. At two o'clock, the company sat down to a splendid cold collation, to which ample justice having been done, the chairman proposed the "Health of Her Majesty," which was drunk with honours. Then followed the health of Prince Albert, he being a resident in the county of Berks. Then followed the health of the host (Mr. Harris), and lastly the health of Mrs. Harris, and thanks to her for the excellent provision made by her for the guests. Mr. Harris responded to this toast, and shrewdly said that Mrs. Harris had not provided more excellently for the company *in* doors than he had *out*; and in proof of that he invited them to his sale field, where Mr. Westall eloquently drew the attention of the company to the stock he had to offer. The lots comprised as above, and after great competition were disposed of, the ewes at prices varying from £3 upwards per head, and the tups at corresponding prices. General Wemyss, for his Royal Highness Prince Albert, was among the purchasers, and the majority of the lots went to distant parts. Mr. Westall truly said that it had never fallen to his lot to offer such a splendid lot of sheep, and in that remark the company joined by giving good prices for the sheep. The sale was alike satisfactory to the vendor and purchasers; and after the sale, the company returned to the house, where tea and coffee were served, and a pleasant evening was spent.

SMALL ALLOTMENTS IN RUTLAND.

NINETEENTH ANNIVERSARY.

On Tuesday and Wednesday the 1st and 2nd Aug., Richard Westbrook Baker, Esq., accompanied by many eminent agriculturists and friends to this system, proceeded on their usual tour in the county, to award prizes for good cultivation, which has been pursued so effectively, and proved of such importance to the labouring poor for many years. The following is the award of prizes, the judges being Messrs. Cutbush, Hammond, and Morris :—

UPPINGHAM—STAMFORD ROAD FIELD.

Prize.	No.		s.	d.
1st.	4	Robert Stretton	10	0
2nd.	9	John Foster	7	0
3rd.	12	George Nutt	5	0

UPPINGHAM CHURCH LAND.

1st.	11	John Hudson	10	0
2nd.	19	Thomas Larratt	7	0
3rd.	10	Thomas Hudson	5	0

UPPINGHAM—LEICESTER ROAD FIELD.

1st.	14	John Mould	10	0
2nd.	1	Thomas Knight	7	0
3rd.	7	John Page	5	0

RIDLINGTON NEW ALLOTMENTS.

1st.	2	J. Woodcock	10	0
2nd.	6	J. Barfield	7	0
3rd.	5	W. Martin	5	0

RIDLINGTON OLD ALLOTMENTS.

1st.	1	John Haines	10	0
2nd.	6	John Barfield	7	0
3rd.	2	John Dunmore	5	0

EXTON ALLOTMENTS.

1st.	64	Charles Speede	10	0
2nd.	33	Robert Hibbett	7	0
3rd.	32	Luke Hibbett	5	0

No. 53, Amos Hibbett, highly recommended.

The following were commended, and received 2s. each :—No. 14, William Preston; No. 19, William Hibbett; No. 30, John Lowe; No. 36, William Cross; No. 37, John Martin; No. 44, James Allen; No. 45, John Fant; No. 51, Daniel Buckle; No. 62, Edward Lee.

BARROW ALLOTMENTS.

Prize.	No.		s.	d.
1st.	5	H. Naylor	10	0
2nd.	3	H. Stubbs	7	0
3rd.	10	W. Freeman	5	0

WHITWELL ALLOTMENTS.

1st.	9	W. Woodward	10	0
2nd.	4	John Bolland	7	0
3rd.	2	Daniel Smith	5	0

COTTESMORE NEW ALLOTMENTS.

1st.	6	James Gamble	10	0
2nd.	9	John Kettle	7	0
3rd.	8	Luke Hibbett	5	0

COTTESMORE OLD ALLOTMENTS.

1st.	23	William Cox	10	0
2nd.	11	William Wortley	7	0
3rd.	18	William Sharpe	5	0

FIELD WITH FIELD—COMPARATIVE MERITS.

Awarded to Barrow. 11 Occupiers, One Shilling each.

THE RANSOME'S PRIZE of One Sovereign, for the best cultivated Allotment in any of the Fields, was awarded to No. 64, Charles Speede, Exton.

During the examination there were present—the Earl and Countess of Gainsborough, the Hon. and Revs. Leland Noel and A. G. Stuart, the Hon. H. Noel, the Revs. Ellicott, Moody, Stackhouse, and Steele; Robert Ransome, Esq., of Ipswich, and family; Messrs. Burgess, Wortley, Pickering, Cheetham, &c., &c., who expressed their entire approval of the general working of the system.

The hospitable reception of the judges at Ridlington Park and Whitwell Rectory, crowned with the usual fare at Cottesmore, and the interesting discussion upon agricultural subjects, rendered this meeting no less important than its predecessors.

We are sorry to state that the potato disease was making rapid progress in 198 allotments which were examined in various parts of the county.—Lincoln Chronicle.

ANNUAL RAM-SALE AT WINTERBOURNE STOKE.—The fifth annual sale of Southdown Rams, from the flock of William Brown, Esq., of Winterbourne Stoke, took place at the Manor Farm there, under the superintendence of Mr. Joseph Harding. There was a good attendance, most of the principal farmers and flock-masters of the district being present, as well as many of the neighbouring gentry, among whom where Sir J. B. Mill, bart.; Mr. Yeatman; Mr. Wyndham, of Dinton; Mr. Biggs, of Stockton; Mr. Davis; Mr. Whiting; Mr. S. Mills, &c., &c. A handsome cold collation was laid out in the field barn, the worthy proprietor of the flock presiding, and paying every attention to the comfort of his guests. The rams for sale numbered 67; but besides these the purchasers had an opportunity of inspecting a considerable part of the flock, which were near the place of sale, and which elicited general admiration for their superior form, size, and quality. Luncheon over, Mr. Harding proceeded to the pens, and after stating the conditions of sale, made some pertinent and business-like observations on the quality of the sheep. He also spoke of the great pleasure he experienced in conducting these sales, arising from the general satisfaction which Mr. Brown's honourable and straightforward conduct created. The sale then proceeded, interrupted occasionally by slight storms of rain. Owing to the large number of lots the competition was not so great as it otherwise would have been, but on the whole the result was satisfactory. A few of the Sheep were put back unsold, but by far the greater number were disposed of, at prices ranging from £4 and £5, up to £16 10s. each. After the sale, Mr. Brown and Mr. Harding, with a number of friends, adjourned to the barn, Mr. Stephen Mills presiding. After partaking of the refreshments so liberally provided, the business of the day was talked over, and the chairman, in proposing the health of their host, passed some well-merited encomiums on the perfection to which he had brought his flock; and, in the name of the party who had been present that day, expressed a hope that he would ever meet with that success which his spirit and enterprise, as well in his general agricultural pursuits, as in that particular department which had called them together, so richly deserved.—Wiltshire Independent.

LEASES OF LAND IN SCOTLAND.

At some of the recent agricultural meetings in this county (Cornwall), attention has been drawn to the limited leases under which the tenant farmers hold their estates. It is represented that a farmer occupying land under a short lease has no inducement to expend much capital in its cultivation, because he knows that his tenure will expire before he can be remunerated for his outlay. The effect is, that agricultural improvement does not advance so rapidly as it would if there were more capital expended in farm management; and, as a further consequence, the public lose the benefit of those larger supplies of agricultural produce which would result from the better cultivation of the land. In Scotland leases have long been granted under more satisfactory conditions than in many parts of England. An act of parliament, passed in 1449, gave the tenants in Scotland those securities which form the basis of the existing common law and usage respecting the tenancy of land in that country. It is probable that many of the farmers in this county are ignorant of the stipulations under which land is held in Scotland, and by the observance of which agriculture has prospered. We therefore extract, for their information, the following notice of "land occupancy in Scotland," from a recent number of *Chambers's Edinburgh Journal*:—

"There are few or no tenants holding land by verbal arrangement; that is, no tenants at will. Every farm is let by a written agreement or lease; and a note or missive stating terms of lease is held to be equally valid as a lease, if followed by possession, and that not only against the granter of the lease, but his heirs and successors. Any shuffle by a landlord to oust a tenant in occupation, on the plea that his lease is not technically correct, would meet with no mercy in the Scottish courts; and an attempt to do anything of the sort would incur universal odium. Leases, however, are usually drawn up with great care and precision. The document, of which each party has a copy, defines mutual rights and obligations, specifies the date of entry to the farm, the duration of the lease, the annual rent to be paid, the routine of cropping &c. Subletting is strictly prohibited, and the least approach to such an invasion of the landlord's rights would be instantly checked. The duration of the lease is ordinarily from fourteen to nineteen years—nineteen, very probably, if the lands require much improvement: in either case, the lease is heritable, and its rights and obligations descend to the farmer's family or heirs. Nineteen years form a reasonable length of time for a farmer to sow and reap in every sense of the word. Insured possession either in his own person or his family, he has an inducement to bring the land into the best possible condition, to drain it and to manure it at his own expense, and to subject it to the most approved routine of agriculture. That he has his reward, is evidenced in the position of respectability enjoyed by Scottish farmers generally. But does the farmer not scourge or exhaust the land towards the conclusion of his lease? This is provided against in the agreement, and also by common usage. He must leave the land unexhausted and in crop, but the period fixed for leaving is usually in November, when there is little crop or seed in the ground. A proportion of the value of the lime and manures lately employed on the land is paid for by the incoming tenant. So far, therefore, the lessee loses nothing; and any selfish inducement to take scourging crops from the land is removed. The incoming tenant is also bound to pay his predecessor for the seed sown and unreaped; that is, any crop at the time on the land. But if the farm has proved a fair bargain during the currency of the lease, the tenant most likely desires a renewal. In perhaps three-fourths of all cases a renewal is granted for a fresh term of nineteen years, and generally at an advanced rent, corresponding to the increased value of the farm.

"No Scottish farmer, starting with a new lease, grudges that he has to pay a somewhat higher rent than formerly. This may seem paradoxical; and yet there is nothing unreasonable in it. A lease for nineteen years is understood to clear all scores. For the first few years, nearly all is paying out; for the latter years, nearly all is coming in—the cost of working the land being much more than covered by the large crops which are produced. It is very interesting to observe the patience with which a Scottish farmer will wait for returns. For years, you will see him with his men toiling to eradicate huge stones from the ground, blasting rocks, digging open ditches, draining with tiles, levelling rude heaps, ploughing, liming, and otherwise improving the farm. At first, the crops are poor; then they begin to look a little better; about the eighth or ninth year they are abundant. Now comes the period of repayment. Ten years of heavy crops, with little outgoing, set all to rights. At the

end of this nineteenth year the land does not owe the farmer a penny. Such, in usual circumstances, being the case, the farmer has no protection to consider the land as his, or to say, 'I have a claim for making this property what it is.' True, he made a garden out of a wilderness; but he has been more than paid for it. If he has been a sagacious farmer, and not engaged to pay too high a rent, the land and he are quits. When the lease refers to land already improved, the nature of the tenure is not altered: the lessee in such instances runs less risk, and has less toil than on a highly-improveable farm; but he pays rent in proportion, and looks alone to the fourteen or nineteen years' possession for a redemption of all outlays.

"On every farm there must necessarily be improvements or meliorations of a substantial and lasting kind, which the tenant cannot be expected to execute even on the principle of self-remuneration. We here allude to the erection of a suitable dwelling-house, a barn, thrashing-mill, and stables, the building of stone walls, planting of hedges, making of roads, and so forth. These things, which are of a permanent character, are always executed at the cost of the landlord, and rem ain his property, the tenant being bound only to keep them in repair. In many instances, a landlord builds a new house for his tenant, on the occasion of a fresh lease, with an advance of rent; and thus, from time to time, the farm-buildings in Scotland have been renewed in a substantial manner, greatly to the improved appearance of the country. There are few examples of Scotch farmers building houses entirely at their own cost. Occasionally, where the laird lacks funds, the tenant will engage to pay part of the money, but only on the condition of being repaid in the form of certain annual deductions from the rent; and it is so expressed in the lease. When a new farm-house is to be erected, the tenant, if a man of capital and taste, may possibly offer to pay a certain share of the expense out of his own pocket, provided he his allowed to have a building to his mind. If the landlord agree to this proposal, it is on the express understanding that no claim is in future to be put forward on account of such an outlay; nor is it to be handed down as a burden to succeeding tenants. In general, the landlord is anxious to make the tenant comfortable, and to live on good terms with him; and many examples could be given of landlords voluntarily exceeding the covenants by which they are bound. The farmer is, for the most part, equally, if not more, desirous of conciliating the good-will of his landlord. The truth is, each has the power to serve and to annoy the other; and there are, therefore, the best reasons for adopting terms of mutual conciliation. The only source of discord may be said to be in the game-laws, which are rigidly maintained by some landlords, greatly to the loss and discontent of their tenants.

"Of the private relationship of landlord and tenant, however, we have here no special reason to speak. As respects territorial management, Scottish landed proprietors manifest a keen sense of what is economically proper. In late years they have disregarded the slow process of melioration presented by existing leases; that is to say, seeing that certain improvements are desirable, which have not been stipulated for in the lease, or considered in the rent, they enter into an especial agreement on the subject. It may be arranged that, for the sum the landlord lays out, the tenant agrees to pay interest at a moderate per centage during the remainder of the lease. By this means land is brought at once into the finest state of tillage, and the landlord is certain of receiving an advanced rent next time the farm is to be let.

"It will be gathered from all we have said, that the Scottish farmer ceases to have any claim whatever on his farm when his lease expires, excepting only what he may have to receive from recently-laid down manure, or the seed of unreaped crops. Houses, fences, drains, meliorations of all sorts, become, as a matter of course, the property of the landlord; because all have been executed either directly at his expense, or in virtue of a covenant, by which the tenant has been requited for his personal toil and pecuniary outlay. No tenant-farmer in Scotland, therefore, ever asks a sum for 'good-will' from his successor: the idea of such a thing would be looked on as preposterous and impudent in the highest degree. With his successor he has nothing to do, except to settle for the transient matters above alluded to.

"Such are the rational, the simple, and satisfactory usages in Scotland respecting lease-tenure. In that country there are no agrarian disturbances: agriculture is pursued as a profession by men of skill and capital; and while the farmers benefit themselves, they also benefit the public, by throwing into the market the abundant produce of their highly-cultivated fields."

ON LIQUID MANURE.

Sir,—It may be presumed that the "North Walsham Farmers' Club," by inviting Mr. Mechi to attend one of its meetings, had for its object the two-fold purpose of eliciting information from that gentleman, relative to certain practices in agriculture adopted by him on his farm at Tiptree; and, subsequently, of promoting discussion on the several points then and there adduced. You, Sir, have extended the sphere of usefulness in this particular, through the medium of the very correct report which appeared in the Norfolk Chronicle; but here it ought not to stop. Mr. Mechi prefaced his explanatory remarks by observing, "if there are any points in my practice that are not correct, I shall be happy to have them corrected as I go on." But the compass of one evening was much too circumscribed to admit of discussing the several points sought to be propounded; consequently, whether from the want of time and opportunity to deliver their sentiments, or, like myself, from the want of capacity to address an audience, the discussion, on that evening, was principally confined to some few of the members of the society; and we have still to learn what impressions the reasonings of Mr. Mechi produced upon his hearers generally, and what upon the public, through the medium of the press. With the view of obtaining this information, I venture to beg the favour of a spare corner in your valuable journal, whenever opportunity suits, for inserting the following remarks relative to one point only; not doubting that you would afford a similar indulgence to others, better qualified than myself to investigate the questions of tenant right, sheep-feeding on *board wages*, under-draining, &c.

The first subjects treated on by Mr. Mechi were those relating to liquid manure and covered fold-yards; wherein he observed, that "the waste of liquid manure in this county, as in most others in the kingdom, is greatly to be regretted, since science has told us that the liquid portion of manure is essentially that part which will produce the kernel of our grain." Subsequently that gentleman goes on to descant on box-feeding and covered fold-yards; concluding with this remark: "I regret, extremely, that the whole of my farm-yards are not covered up. If I had to rebuild them, *not one drop of water should fall in any portion of them.*" That a vast quantity of liquid, which holds in solution the essential properties of manure, is carried off by overflowing from the fold-yards, is unquestionable; but whether or not the opposite extreme, as recommended by Mr. Mechi, is worthy of adoption, requires to be seriously investigated. In all probability, the happy medium consists in turning off all the water which falls upon the surrounding buildings, or, in some cases, from an inclined plane adjacent thereto, which might produce a sufficient influx of surface-water to drench the yards. No one will attempt to dispute the propriety of retaining the sewerage of the fold-yards by some simple and inexpensive method, although but few persons ever trouble themselves to adopt this precaution; simply perhaps, because we have yet to learn how it can be advantageously applied to the land; in what quantity, for which crops, and at what cost. For myself, I have never seen an instance, in this country, where the application of what we call liquid manure has been sufficiently advantageous to repay the cost of tanks, water-carts, and labour; and, moreover I entirely believe that the unchecked fermentation of large heaps of raw manure, fresh from the cattle yards, is productive of ten-fold greater waste and injury, than the loss of all the sewerage water of the homestead. Nevertheless, there can be no possible reason why we should not attempt to retain the one and remedy the other, if it can be shewn that both are practicable.

The application of liquid manure is a subject of notoriety as appertaining to the husbandry of Switzerland. Every one has heard that the Swiss people are particularly careful that no portion of the urine of their cattle, or the waste water of the household establishment, in the shape of soap-suds, &c., should be lost; but the term *liquid-manure* conveys but a very imperfect notion, either of the quality of the manure so called by us, or the process adopted by them to make it subservient to useful purposes. All that we understand by the term is, that of retaining a few barrels of sewerage-water impregnated with the urine of cattle, and transferring the same, through the medium of some vessel, to be applied as a top-dressing to wheat or layers. The practice in Switzerland is much more elaborate and efficacious, and may be worth transcribing; although I apprehend that the farmers in Norfolk would much rather pay for their tons of oil-cake, than expend the same amount of money in labour, or take a lesson from the persevering industry of continental husbandmen.

The practice alluded to is as follows:—A square plot of ground, in the vicinity of the homestead, varying in its dimensions according to the quantity

of manure intended to be put upon it, is compressed and beaten firm, in order that the juices may not penetrate the soil, which is surrounded, on nearly all sides, by a tolerably wide and deep trench, made also impervious to water. Upon this bottom, the litter from the *vacherie*, or cow-house, is periodically deposited; not in a loose and slovenly manner, but with all the neatness and precision which may be observed in a new-made hay-rick, when the ends are tucked in with a spade; thus the outer walls, bordering on the edge of the trench, being constructed with the longest litter, the interior of the heap is made up with the vegetable refuse of the farm and gardens, or any other coarse herbage that can be collected. It will already be understood, that the trench which surrounds the heap is intended to receive the water that exudes therefrom; and not only this, together with the natural fall of water from the heavens, but all the drainings of the yards and cattle-lodges are added thereto. During the process of enlarging the heap, the liquid from the trench is continually being scooped or thrown over the mass, which process is repeated till the whole is in a perfect state of decomposition, and in the compact form of what we call spit-manure. Perhaps the idea has already presented itself to the reader, that spit-manure has no affinity to the liquid-manure which I profess to describe. True; but this will present itself in the sequel. When the manure, thus prepared, is required for use, it is cut down in slices, and cast into the trench previously supplied with water, where the whole mass is puddled into a pulpy liquid, in order to be removed to the land on which it is intended to be applied. It is not my purpose, now, to particularize the mode of Swiss husbandry; but I may be permitted briefly to revert to one feature thereof, in order to show the advantage which these people derive from manure thus prepared in one particular instance. Immediately after the white crops are removed from the fields, wheat and rye more especially, the land is hand-picked by women and children, of stubble, weeds, and every other species of herbage, all of which is removed to the homestead to undergo the process heretofore described. The land is then ploughed and sowed with turnip or rape-seed, in proportion as the season is more or less advanced; if the former, the plants remain undisturbed till they attain to about the size which ours are at the second hoeing; they are then gone over roughly with the hoe by men, followed by women, who thin them into proper distances. The puddle-manure is now put in requisition, and is brought to the spot by means of immensely large barrels, on two or four wheels, which we should call water-carts, but which the French designate by the term of *fosse mobile*, or moveable ditch. The end of this barrel is supplied with an aperture, about the size and shape of the pigeon-hole in a dove-cote, which is opened or closed by a valve and trap-stick, to admit of the contents being let off into a stand placed underneath, for the convenience of dipping smaller vessels, from which the dressing of puddle-manure is removed by hand, and deposited immediately at the root of the plants, which, being supplied with food of easy digestion, make " a very comfortable meal," as Mr. Mechi expresses it, grow rapidly, and produce larger bulbs than could be obtained by any other process, thus late in the season. It will readily be understood that, by the method above described, decomposition is produced by absorption, instead of by fermentation, and that it requires a longer period to obtain the same result in the one case than it does in the other; but then, to make use of an axiom in mechanics, it may be accepted as a principle, that " what is lost in time, is gained in power," since it is but too certain that a larger portion of the more subtle and gaseous properties of manure is disengaged and evaporated by fermentation than we are aware of.

I am, sir, yours very respectfully,

May 1st, 1848. W. Norfor.

—Norfolk Chronicle.

INDUSTRY AND COMMERCE OF HOLLAND.

Holland, or the kingdom of the Netherlands, is the country which has demanded the greatest exertion of intelligence on the part of its inhabitants to support its independence of any country in Europe. Of late our Dutch neighbours have happily been unusually communicative of statistical returns. Of 7,600,000 acres which the kingdom measures in area, to the exclusion of Limburg, and Luxemburg (that are rather German than Dutch), we are told that 5,400,000 acres have to be freed from the water which annually inundates them, whether in the shape of rain or floods, by 9,000 windmills, each of which is estimated to clear 600 acres. We are inclined to doubt the strict accuracy of this statement, which has been adopted by an Edinburgh reviewer, since 2,000,000 of acres are said to lie uncultivated, in the shape of peat bogs and arid sands.

The number of mills may exist, and, even if their power be exaggerated, must testify to the predominant feature of the country. In fact, a large portion

lies below the level of the sea, and a still larger below that of the numerous and wonderful canals constructed with great art and vast expense to carry off the water.

Nature seemed therefore to prescribe an agricultural system in terms too dictatorial to be mistaken, and the Dutch have only occasionally allowed themselves to be diverted from the reasonable path. Spring crops alone are practicable in the greater part of their arable land, and green crops are sure to be the most remunerating and safest. To import grain and export dairy produce is the simple and unerring calculation of the Dutch farmer. Were the drainage confined to pumping alone, or to pumping with necessary water cuttings, as in our own Bedford level, this mode of dealing with the land would make agriculture in Holland a highly remunerating occupation. A dairy farm of 20 bunders (or 50 acres), is calculated to yield, from 20 cows, 1,600 lbs. of butter and 3,200 lbs. of cheese. It will, besides, supply grazing for a couple of horses.

1,600lbs. at 9d.	£60	0	0
3,200 ,, 3½d.	46	13	4
20 calves at £2....	40	0	0
	£146	13	4

equal to £2 12s. 8d. per acre, besides pigs, &c.

The yield, of course, varies very much in different situations, owing to the differences in soil, abundance, and good condition of farm buildings and other things. It may in many parts be below the above calculation, but it rises to £3 and £4 per acre on farms which yield 2½ and 3 cwt. of cheese, and a similar proportion of butter, which is not an uncommon thing on the clay lands of Friesland. The usual Dutch cheese is made of the skimmed milk. But there are finer kinds made for home consumption, with all or a portion of the cream left in the milk. The most highly prized in Holland is the "schapekase" or ewes' milk cheese, which sells at a high price. Butter and cheese are useful to the dairyman, as being the shape in which his produce can be sent to distant markets. The Dutch sell the milk wherever the vicinity of their numerous large towns affords them an opportunity of doing so; and great use is made of the smooth canal navigation, which does not shake the milk, to send it to Amsterdam and other cities, from distant parts. Where this can be accomplished, the return from the land is proportionably greater, by the smaller number of labourers employed than on the butter and cheese farms.

A considerable quantity of butter and cheese is exported annually, chiefly from Harlingen, in Friesland, to this country. From recently published returns, it would appear that England takes all that is exported, and that even foreign butter is imported into some parts of Holland, whilst this exportation goes on at others. In 1844 the quantity of butter imported into England from all parts was 185,511 cwts., or 10,150,000 lbs. Dutch. By the Dutch official reports Holland exported 10,804,000 lbs., and imported 63,600 lbs. in that year.

The grain importation and exportation was in 1844:

	Imported.	Exported.
Wheat....	21,160 lasts	4,030 lasts of 4,000lbs.
Rye	36,610 ,,	512 ,, ,,
Barley....	13,836 ,,	9,862 ,, ,,
Oats	1,173 ,,	8,722 ,, ,,
Buckwheat	590 ,,	43 ,, ,,
Flour and meal ..	1,790,100 lbs.	31,800 ,, ,,

These short statements suffice to show that the scale in agriculture has turned against white crops, notwithstanding the good use to which the Dutch put a great deal of the corn they raise. Nearly all are spring crops, and are said to average

Wheat.....	1,272,225	muids, or	400,000 qrs.
Rye.....	3,015,639	,,	1,000,000 ,,
Barley.....	1,174,124	,,	400,000 ,,
Oats	2,342,636	,,	781,300 ,,
Buckwheat..	91,233	,,	30,400 ,,
Rape and Linseed	1,439,566	,,	479,850 ,,

The distilleries at Schiedam are said to consume alone 30,000 lasts, or three millions of qrs. of grain of all kinds annually. Great Britain alone imported 408,907 gals. of Dutch Geneva in 1845, of which, however, owing to the extravagant duty, but 15,504 gals. entered into consumption. Tobacco is extensively cultivated. We find stated in

Guelderland	1,188,235 lbs.
Utrecht	868,808 ,,
N. Brabant	404,054 ,,
S. Holland	770,576 ,,

as the yearly crop. Madder is chiefly grown in Zealand; the quantity exported in 1844 was 4,020,500 lbs. The export of flax was 5,000,000 lbs., whereas of hemp there was 18,000,000 lbs. imported, and but 60,000 lbs. exported.

On Friday, at the audit of Wm. Speke, Esq., Jordon's House, near Ilminster, Mr. Thomas Trout, the well-known agriculturist of Ashill farm, was presented with a splendid silver tankard, value *twenty-five guineas*; his farm being in the best state of cultivation, and highly recommended by that practical and experienced surveyor and valuer, Mr. John James, of Croft farm, near Crewkerne, who viewed the farms of the numerous tenantry, previous to the court day. Mr. Richard Bryant, of Beer Mills farm, was also rewarded with a handsome piece of plate, for his exertions in the management of his farm. Those marks of approbation were conferred on the tenants in a kind and unostentatious manner, by their much esteemed landlord and friend, and were received with grateful acknowledgments by the successful candidates. The tankards were filled, and the health of William Speke, Esq., was drunk with enthusiastic applause; as were also the healths of his stewards, Messrs. Clark and Salter, of Chard.

A LECTURE ON THE ANATOMY, PHYSIOLOGY, AND PATHOLOGY OF THE DIGESTIVE ORGANS OF THE OX AND SHEEP.

BY JAMES B. SIMONDS, LECTURER ON CATTLE PATHOLOGY IN THE ROYAL VETERINARY COLLEGE, LONDON.

My Lords and Gentlemen,—At the request of the Council of your influential and patriotic Society, I have the honour to address you this evening on a subject which is closely identified with the prosperity of agriculture, namely, the diseases of cattle and sheep. In the observations which I shall make, it will be my endeavour to use plain and familiar language, and to avoid as much as possible technical terms. If, however, I fail to do this, and should need your indulgence, I venture to hope that it will not be withheld; for my daily avocations ill adapt me to employ popular expressions in describing either the structure of a part or the nature of a disease.

Cattle pathology, like every other division of medical science, is so extensive, that many lectures are necessary to explain its leading peculiarities; and it is almost impossible to condense into one that amount of information which shall prove practically useful to those by whom this branch of medicine has never been investigated. In fact, great perseverance and research are required to understand the workings of Nature's laws, when any single organ becomes impaired. Hence those only, who have by previous study made themselves conversant with the various tissues composing an animal body, are fitted to undertake the treatment of disease; and not only is this knowledge absolutely needful to secure success, but equally so is an acquaintance with the functions of the different organs. Anatomy supplies the one requisite, and physiology the other; while by a union of these sciences a basis is formed, upon which is raised the practice of pathology, or the skill of repairing any defects in either the structure or function of the frame.

It will, therefore, be easily understood that the selection of a subject best suited for the carrying out the wishes of your Council has been difficult; for I had to avoid discursiveness on the one side, and minuteness of detail on the other, and yet to speak of that which should be both interesting and instructive. After due consideration I have decided upon confining my observations to that system of organs termed the digestive, and principally as developed in ruminating animals. With a view also to render my description better understood, I propose to divide the lecture into two sections, and first to explain the leading peculiarities of these viscera; and next, the nature of some of their diseases.

The supplying of animals with suitable food, the knowledge of the way in which it is appropriated to the wants of the system, and of the ill effects arising from impaired digestion, are of the first importance to those who devote their time and their money to the fattening and rearing of our domesticated breeds.

The process by which the aliment is converted into flesh and blood is similar in all animals of the highest order, but is modified by the habits of the creature and the character of the food on which he subsists. Digestion may be said to be the chief means employed by the great creative Power for the preservation of all beings; and upon it and assimilation health likewise mainly depends. For in proportion to the energy of digestion, so will be the purity of the blood—that fluid which carries, by its circulation through the heart, arteries, and veins, the elements of vitality, nutrition, and renovation to every part of the body, One organ, therefore, has a mutual dependence on another, and each is so adapted that it may perform its function in the best possible manner. We have evidence of this wisdom of design in the various arrangements of the bones of the head, and in the attachments of the jaws in different animals; and as digestion begins in the mouth, I shall first direct your attention to the peculiarities here met with.

The circumstance of some creatures living on food which others reject has influenced naturalists in placing them in different classes. Our domestic animals offer a sufficient illustration of this, as among them we find both vegetable and flesh eaters, and also those which partake of both these kinds of diet. The horse, ox, and sheep are graminivorous; the dog and cat carnivorous; but the pig is omnivorous. We may also state that in general the stomachs are complex in the herbivora, simple in the carnivora, and hold a middle position in the omnivora. Many other particulars besides the above-named govern the arrangement of animals in groups or families, but it is unnecessary to occupy your time with an account of them, as a reference to the following table will show each subdivision:—

Zoological Arrangement.

DIVISION.	CLASS.	VARIETY	FAMILY.	ORDER.	TRIBE.	GENUS	SUB-GENUS.
Vertebrata	Mammalia	The horse	Ungulata	Pachydermata	Solipeda	Equus	Equus caballus
		The ox	Ungulata	Ruminantia	Bovidæ	Bos	Bos taurus
		The dog	Unguiculata	Carnivora	Digitigrada	Canis	Canis familiaris
		The sheep	Ungulata	Ruminantia	Capridæ	Ovis	Ovis aries
		The pig	Ungulata	Pachydermata	Pecora	Sus	Sus domesticus

It must, however, be observed that a separation of animals into vertebrate and invertebrate is the first grand division made by zoologists. The former class includes all that possess a chain of bones (vertebræ) extending from the head, and forming a cavity through which passes the spinal marrow, or a continuation of the brain: the invertebrata are without these bones. The second separation consists of those which are furnished with mammæ, or teats; and it will be evident that such animals bring forth their young alive—are viviparous, not oviparous: fishes and birds thus belong to another class. The mammalia are numerous, and may be said to inhabit the water, the earth, and the air, of which we have examples in the whale, the horse, and the bat. All of them are warm-blooded, breathe atmospheric air, and possess lungs for the purification of the blood.

To return to the chief subject of this discourse. It has already been stated that digestion commences in the mouth, where important changes are effected in the aliment. The way in which our different domesticated animals collect their food, and convey it into this receptacle, first therefore demands our attention. The lips, tongue, and incisor teeth are the organs principally employed for that purpose, and consequently they are more or less prehensile in all. The horse, when feeding on natural herbage, grasps the blade with the lips, and by them it is conducted between the incisors, which he employs for the double purpose of holding and detaching the grass, the latter action being assisted by a twitch of the head. The sheep gathers his food in a similar manner, but he is enabled to bring his cutting teeth much nearer to the roots of the plants, in consequence of the upper lip being partially cleft. Hence the adage, that "the sheep will fatten where the ox will starve;" for the upper lip of this animal is thin, and possesses considerable mobility; while that of the ox is thick and hairless, and has a very limited action. The ox uses the tongue to collect his food. The organ, being protruded from the mouth, is so directed as to encircle a small bundle of grass, which is carried by it between the incisor teeth and an elastic pad placed opposite to them in the upper jaw—between these the herbage is pressed and partly cut asunder, its complete severance being effected by tearing. Most ruminants possess a great freedom of action in the tongue, of which we have a good illustration in the giraffe when browsing.

The aliment, being received into the mouth, is next conducted between the molar teeth, where it is subjected to a grinding process (mastication), during which it is also mixed with the fluid called saliva—in other words, it is insalivated. The action of the jaws in mastication differs even among vegetable feeders, arising from the peculiar attachment of the lower maxillary bone to the skull. This difference is most striking between ruminating and non-ruminating animals. In the ox, the mouth being slightly opened, the lower jaw is carried to one side, next elevated so as to approximate the surfaces of the molars, and then moved in the opposite direction, bruising the food between the teeth. This action, having commenced, is generally continued either from right to left or *vice versâ*, depending on the will of the animal. A separation of the jaws does not take place to the same extent in the horse, but the provender is comminuted by an alternate motion of the jaw from side to side. In the dog and the carnivora the lips are simply retractile, and the molar teeth are used for crushing only, there being no lateral action of the lower maxillary bone. The incisor teeth in this class may likewise be viewed as organs of prehension.

In the mammalia the teeth are situated in grooves formed in the bones which compose the mouth; in fishes they often occupy the upper part of the gullet, and are attached to the lining membrane of the oral cavity; and in the crustacea they are placed in the stomach. The gizzard of the fowl performs an analogous office to mastication in ani-

mals, its function being assisted by earthy matter which is swallowed by the bird.

We will add a few remarks on some of the leading peculiarities of the teeth. The incisors in the horse are twelve in number, arranged in two sets—six in the upper and six in the lower jaw—their faces, which are flattened, have an identation (the mark), which affords evidence of the age of the animal. This hollow is surrounded by the central enamel, between which and the outer border of the tooth the dentine, or ivory, is exposed to attrition. The developement of enamel in this situation tends to keep up an irregularity on the surface of the organ, by which its cutting property is preserved, for this substance possesses a far greater density than the other structures composing the tooth. The ox and sheep have eight incisors; they are situated in the lower jaw, and differ altogether in their shape from those of the horse: viewed in front they present a sharp edge, from which they slope inwards and backwards, giving them a scoop-like form. The edge is formed by enamel, which covers the dentine; its greater hardness causes the tooth to retain its original shape for some time, but long-continued wear renders it more or less flat, a condition which is indicative of advanced age. The early-formed teeth are temporary and small; they give place to a permanent and larger set at the period of adultism, when all parts of the frame are matured. Many of the rodents are said to change their teeth several times: the hare and the rabbit belong to this class. Most ruminants are devoid of tushes; the camel and some of the deer tribe are, however, exceptions. The molar of the horse, ox, and sheep are twenty-four in number, arranged in sets of six on either side of each maxillary bone. Their composition and development are essentially the same, although they vary in size and form in each animal; it is, however, unnecessary to enter upon these details.

Mastication and insalivation are important processes in the digestive function, and any derangement of them is certain to be associated with impaired health. The saliva is furnished by a number of secreting organs (glands); the chief of these are the parotid, the submaxillary, and the sublingual, all of which are of large size in ruminants; besides which, in these animals we meet with a number of other glands, which receive the name of buccal, from being placed directly beneath the lining membrane of the mouth. Physiologists are divided in opinion with reference to them, some viewing them as salivary, and others as mucous glands.

The quantity of saliva which is secreted is very considerable, and several pints may be obtained in the course of a few hours from even one of the parotids. The action of this fluid on the aliment is twofold—chemical and mechanical: by the first the food is rendered alkaline, and by the second soft and pulpy. The saliva is also viscid—a condition that depends on its being commingled with mucus, which is secreted by glandular structures that thickly stud the parietes of the oral cavity. We can only allude to the viscosity of the saliva, which serves, according to Liebig, an important use in the animal economy, by conveying oxygen, in the form of atmospheric air, into the stomach. The following figure will explain the salivary apparatus.

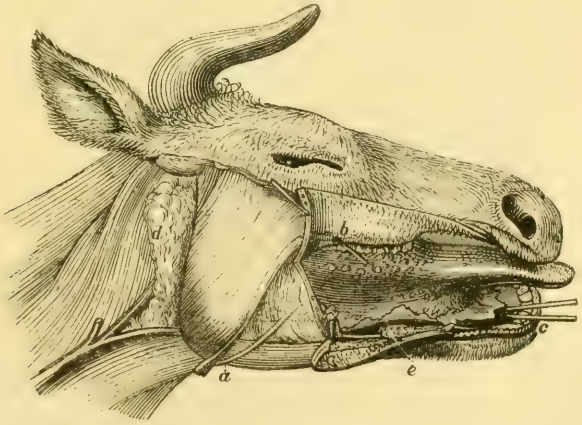


FIG 1.

a, The Parotid Duct. *b*, Its Opening into the Mouth. *c*, The Entrances of the Submaxillary Ducts. *d*, The Parotid Gland. *e*, The Sublingual Glands.

In the ox and sheep the food undergoes but little preparation when first taken in, being quickly conveyed through the œsophagus (gullet) to the rumen, from whence it is subsequently returned for a second mastication. Deglutition or swallowing is a compound act, and may be divided into three distinct stages: the first of these is voluntary, the second but partly so, and the third altogether involuntary; the first conveys the food from the tip to the dorsum of the tongue, the second from thence to the pharynx placed at the upper part of the gullet, and the third from this to the stomach. The velum palati, or veil which guards the openings of the nostrils at the back part of the mouth, is large in the horse, and so situated as to direct the current of air, in ordinary respiration, through the nostrils. An equal development of this structure in the ox or sheep would interfere with the return of the ingesta from the pharynx in rumination, and consequently in them the veil is of smaller size, and takes a somewhat altered course; hence these animals are enabled to breathe both through the mouth and nostrils.

The entrance to the œsophagus is by the pharynx, which is defined by anatomists to be a funnel-shaped receptacle for the food, composed of several pairs of muscles, and lined by a continuation of the membrane of the mouth. The œsophagus may be viewed as a canal extending from the mouth to the stomach; being also constituted of muscular fibres, and lined with a mucous membrane. These fibres possess an action independent of the will, as is the case with all muscles belonging to organic life. Their arrangement varies in different classes of animals; but we shall speak principally of it as observed in ruminants. The œsophageal tube has a loose cellular connection to the parts by which it is surrounded, so as to allow of its dilatation in the acts of deglutition and rumination. The muscular coat is composed of two orders of fibres, which partly decussate on each side of the canal, the internal layer thus becoming the external, and *vice versâ;* their leading arrangement may, however, be compared to two circular-shaped bands placed obliquely, the one within the other, by which an equal facility is given to their action when commencing at either extremity. In its course down the neck, the œsophagus is situated more above the trachea than in the horse, it passes between the two first ribs, traverses the upper part of the chest, penetrates an opening in the diaphragm (midriff) termed the foramen sinistrum, and enters the anterior and superior portion of the rumen. At the lower end of the tube the outer order of muscular fibres is found to take a direction nearly parallel with its course, and to be reflected upon the rumen, blending with the external muscular layer of that viscus. (See *a*, fig. 4.) The mucous lining membrane, to which we have before referred, lies in longitudinal plaits in a passive state of the œsophagus; an arrangement which allows of its being extended in the ascent or descent of the ingesta, for it is very loosely joined to the muscular coat. Between these two coats a considerable quantity of elastic tissue exists, which throws the membrane into the above-named folds after being upon the stretch, for of itself it is devoid of contractility and elasticity.

We proceed to a description of the stomachs. The size, shape, entrance into, and passage out of the stomach are modified according to the nature of the food and the habits of the animal. As before observed, the organ possesses its simplest form in the carnivora, and its most complicated in the ruminantia. In vegetable feeders it is always more complex than in those animals that subsist on flesh, as a necessity exists for the aliment to be detained within it for a greater length of time. We have good evidence of this by comparing the stomach of the dog with that of the horse; in the former, the openings leading to and from the cavity are far removed, while in the latter they are situated close to each other; hence the ingesta has to travel nearly to the place where it entered, before it can escape. This causes a longer retention and a more complete action of the gastric juice upon the ingesta, to prepare it for conversion into blood. In omnivorous animals, as the pig, the stomach is imperfectly divided into two or more compartments or pouches, an arrangement which allows certain qualities of food to be kept within it for a longer period. We should also mention, that in the omnivora the mucous membrane of the œsophagus lines a small portion of the cardiac orifice of the organ; in the carnivora it ends immediately at the entrance of the tube; but *even in the simple-stomached* herbivora it extends over a large part of the cavity: the cause of this is evident when we look to the nature of the food on which these several animals subsist.

Our domestic ruminants offer a still more interesting field for investigation, as in them we find four distinct stomachs or receptacles for the aliment; of these one only is the true digestive organ. The names given to them are, *the rumen* (paunch), *the reticulum* (honeycomb), *the omasum* (manyfolds), and *the abomasum* (rennet): figures 2 and 3 represent the right and left view of the stomachs of the sheep, as seen *in situ*. The rumen is by far the largest of these viscera; it inclines to the left side, and occupies a considerable portion of the

Fig. 2, Right View.

a, The Œsophagus. *b*, The Rumen. *c*, The Reticulum. *d*, The Omasum. *e*, The Abomasum. *f*, The Duodenum.

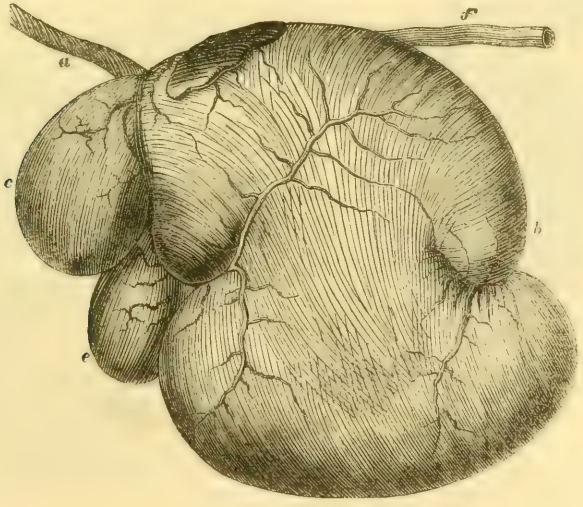


Fig. 3, Left View.

The references are the same; the Omasum is not seen.

abdominal cavity, extending from the diaphragm in front to the pelvis behind. Like the other stomachs, it has three tunics or coats; the external being continuous with the ordinary serous lining of the abdomen: beneath this is placed the muscular coat, and on the inner surface the mucous, which is covered by a thick epithelium. The muscular coat is thicker in some parts than in others, and its fibres are crossed by strong fleshy bands, which divide the viscus into four pouches. The accompanying figure of the external view of the rumen of the ox, as seen on the right side, where the bands are chiefly developed, shows the divisions; they are, however, better delineated in the subjoined sketch of the interior of the rumen and reticulum. The compartments serve for the retention of the

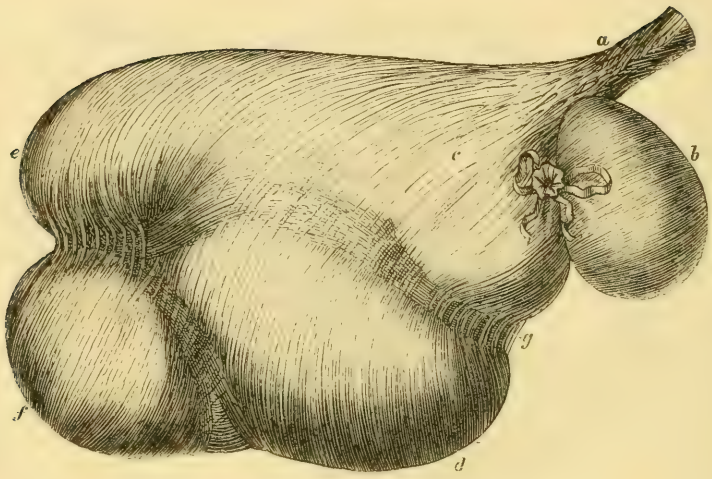


FIG. 4.

c, The Anterior Pouch. *d*, The Middle. *e*, The Postero-Superior. *f*, The Postero-Inferior.

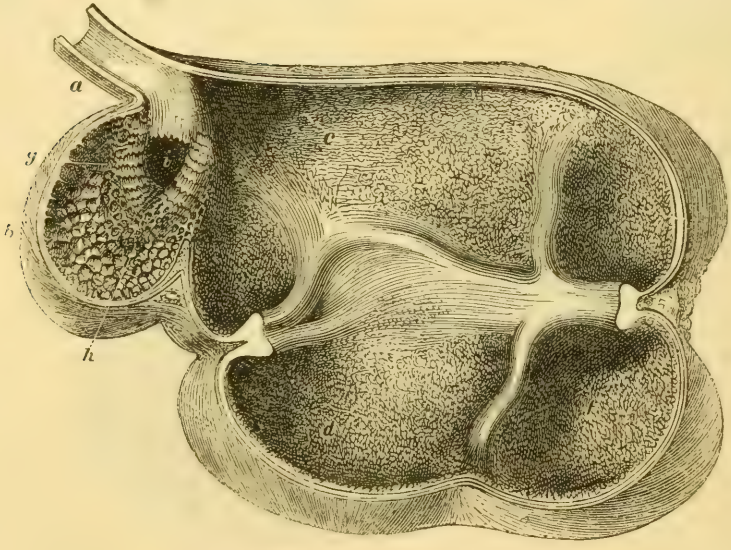


FIG. 5.

The Rumen and Reticulum laid open by removing the left side, while *in situ*.
a, The Œsophagus. *b*, The Reticulum. *c*, The Anterior Pouch of the Rumen. *d*, The Middle. *e*, The Postero-Superior. *f*, The Postero-Inferior, Compartments. *g* and *h*, The Pillars of the Œsophageal Canal. *i*, The Entrance to the Omasum.

food, which is thereby softened by exposure to the secretion of the organ; they also perform other important offices, which will be presently explained. The membrane which lines them is more or less papillated throughout, but particularly at the inferior part of each pouch; the bands, however, have comparatively a smooth surface, so that no additional mechanical impediment should interfere with the ready passage of the aliment from one pouch to the other. The function of the rumen will be better

understood when the peculiarities of the reticulum have been pointed out. This viscus receives its name from the net-like structure of its mucous membrane. It is attached to the anterior part of the rumen, on the left side, and lies directly under the termination of the œsophagus. Its muscular coat is composed of two orders of fibres, the outer being arranged in a circular and the inner in a longitudinal direction, by which means the viscus is capable of being generally compressed. On exposing its interior, by cutting away the left side while *in situ*, two fleshy bands are seen leading from the termination of the œsophagus, and winding through the cavity towards an opening which communicates with the omasum. These bands or pillars constitute the lateral boundaries of the œsophageal canal (See *g* and *h* fig. 5.) The muscular fibres of which they are formed run parallel with their course, and, when in action, they must tend to approximate the entrance into the omasum to the termination of the œsophagus. We proceed to make a few observations on the physiology of these two stomachs, it being generally admitted that they are chiefly employed in the act of rumination; although a difference of opinion prevails as to the manner in which this is effected. We have previously remarked, that the food when first gathered is but slightly masticated. This crude food in being swallowed proceeds from the gullet direct into the anterior division of the rumen, without entering the œsophageal canal, as has been described by most authors. Pellet after pellet is swallowed until repletion of the paunch is produced, when rumination usually commences. The act of rumination, although under the control of the will, is partly excited by the nature of the aliment and the amount of the distension of the paunch: it may be said to consist of the passage of a portion of the ingesta up the œsophagus, its re-mastication and insalivation together with its re-deglutition. The prevailing opinion is, that the food passes from the rumen into the reticulum, where it is moulded into a small ball, and by an energetic contraction of that viscus is forced into the œsophagus; and that in its second descent, "either being of a softer consistence, or not being so violently driven down the gullet, or by some instinctive influence, it passes *over the floor of the canal without separating the pillars*, and enters the manyplus, or third stomach."* We do not agree with these statements, and are of opinion *that the food in its second descent goes into the rumen; and also that it is propelled directly by this viscus into the gullet, to be re-masticated.* Thus we ascribe the same function to the rumen which is said to belong to the reticulum. The situation of the second stomach must interfere with its supposed property of propelling upwards the pellet, for it is placed nearly at a right-angle with the course of that tube. This objection does not apply to the anterior division of the rumen, which we believe to be the part from whence the food is ejected. The muscular coat is thicker here than elsewhere, and its fibres are continuous, as before remarked, with those of the lower part of the œsophagus; besides which, we find them implanted into a strong fleshy band, which crosses the viscus in such a direction that it serves as a fulcrum from which they can act. (See *g*, fig. 4.) Thus we see that even upon mechanical principles the rumen is adapted for this *special* purpose. If the *re-masticated food* descended directly into the third stomach, we should expect to find that organ of a proportionate size to contain as much as would undergo the process during at least one rumination; for all authors agree that the food is detained for some time in the omasum, and it is well known that an ox will continue to ruminate for upwards of an hour. The omasum, however, in this animal, is far too small for such a purpose, and in the sheep it is relatively smaller. If also it be true that such aliment does not pass into the rumen, "because it is less irritating to the pillars of the canal," then *prepared* food, as soft mashes, &c., ought when *first* swallowed to enter the omasum, and fluids would also take the same course; whereas we have many proofs, afforded by experiments, that these find their way into the first and second stomachs. Besides which, the pillars do not form "the *floor* of the œsophageal canal,"* as stated by Mr. Youatt and others, but *the sides* of the channel: and *if they are placed in contact, then there is no passage or duct behind them:* in short, the errors of description have arisen from studying these structures on the dissecting-table alone, and not in their natural situation. Our opinion of rumination receives further confirmation from the fact that many ruminants, of which the camel is an example, do not possess a reticulum; therefore in such animals the rumen must propel the ingesta upwards. We could advance many other facts to negative the general belief, but it is unnecessary to do so on this occasion. It may be asked, what function we ascribe to the reticulum. We answer, that it supplies the third stomach with aliment suited for digestion; this it receives from the rumen by the ordinary peristaltic action that is continually going on in that viscus, and passes it at intervals through the aperture situated at the inferior part of the œsophageal canal. (See *i*, fig. 5.) And we are further of opinion, that the before-mentioned pillars perform an office analogous to a sphincter, by drawing

* Youatt on cattle, p. 432.

* Cattle, p. 427.

the opening which communicates with the omasum towards the œsophagus, and thus close it against any coarse or indigestible matter that is presented by the reticulum.

The omasum is situated to the right of the paunch, and is the medium of communication between the second and the true digestive stomachs. Its ordinary name, *manyfolds*, is given to it from the lining membrane being plicated. The plaits vary in length, and follow no definite arrangement with reference to the dimensions of those which are placed side by side; their number also differs in different animals; from 80 to 100 are usually found in the ox, but rarely more than 50 in the sheep. At the entrance next to the reticulum they spring from, or are condensed into six or eight prominent ridges, which evidently divide the current of softened ingesta, as it flows from that viscus, and thus disperse it between the multiplied folds.

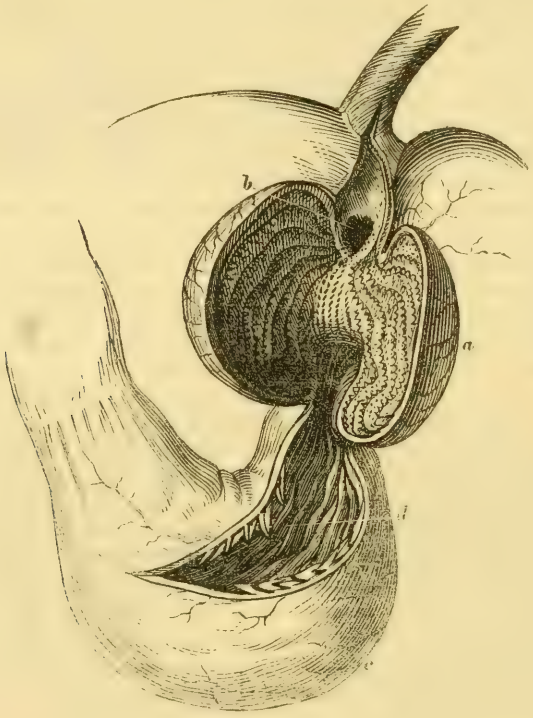


Fig. 6.

a, The Omasum cut open to show its folds, &c. *b*, The opening communicating with the Reticulum. *c*, The Abomasum or true Digestive Stomach. *d*, The Villous Membrane of the Abomasum, which is also plicated.

The function of the omasum has been compared to the gizzard of the fowl, but improperly so in our opinion, for its muscular coat is so slightly developed that it is impossible for it to exert any triturating effect on the aliment; and the altered and varied condition of the contents of the stomach, as we believe, depends entirely on the amount of fluid secreted by it. A reference to fig. 7, representing the stomachs of the calf with the vessels injected, will show that the omasum, *b*, receives a large quantity of blood—much more than can possibly be required to maintain the integrity of its structure, and, consequently, this must be sent for the purpose of secretion. We therefore regard the function of the organ to be that of effecting the retention of the food by its mechanism, so that it may undergo a more complete maceration and softening by its secretion prior to entering the abomasum. The food, which has passed the three first stomachs, now enters the fourth, where it is subjected to the action of a particular solvent fluid called the gastric juice, by which it is converted into a chymous mass. This viscus, which is marked *c* in figs. 6 and 7, is commonly called the rennet, probably from the cir-

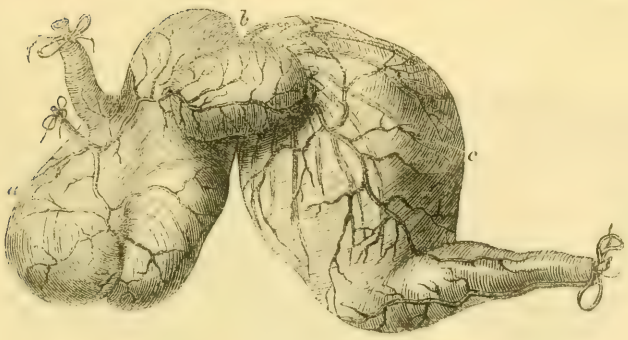


Fig. 7.

a, The Rumen. *b*, The Omasum. *c*, The Abomasum.

cumstance that the preserved fourth stomach of the calf is used to coagulate the milk in the making of cheese: a fact which is referrible to a chemical action of the acid of the gastric juice upon the casein of the milk. The internal tunic of the abomasum differs altogether from that of the other stomachs; it has a velvety appearance, and is therefore designated a villous membrane. The villi or shaggy projections of which it is composed are intimately connected with the secretion of the fluid referred to. The membrane lies principally in folds, most of which run parallel with the length of the organ; at its entrance two of them are so adapted as to prevent a regurgitation of the contents, and at the extremity, which communicates with the intestinal canal, they take an irregular course across the short diameter of the stomach. The abomasum is largest at its commencement, and gradually diminishes towards its termination: it also turns upon itself, taking an upward direction (see *e*, fig. 2), and thus are formed its greater and lesser curvature. The peculiar arrangement of the lining membrane, besides affording a large extent of surface for secretion, seems likewise to be well calculated to assist the passage of the chyme into the intestines mechanically; as the cross rugæ at the pylorus tend to support the weight of the mass passing through it, while the longitudinal plaits present no obstacle to its progress.

Digestion is mainly, if not entirely, a chemical process, in which the hydrochloric and acetic acid of the gastric juice play the chief part. To enter fully into this subject would divert us from our project, and therefore we proceed to speak of the changes effected in the intestinal tube on the chymous matter. We will first, however, make a few observations on the development of the stomachs of the calf during the period of lactation. These viscera present a striking contrast with the fully formed stomach of the adult ruminant, for we find the abomasum to be the largest, and to be the only one actively employed at that time. This arises from the fact that the milk requires no preparation to suit it for digestion, and, consequently, it passes directly from the œsophagus into the fourth stomach. Its conveyance into this organ is effected by the muscular pillars of the œsophageal canal, which incontrovertibly proves that their function is to draw the opening of the third stomach towards the termination of the œsophagus, and in doing this they also approximate the entrance to the abomasum to the same part; as in the young animal the opening may be said to be common to both these stomachs. The annexed sketch (fig. 8) will show some of the peculiarities here pointed out.

The aliment, having been sufficiently acted on by the gastric juice, enters the first intestine, the *duodenum*, where it undergoes the process of chylification, by which its nutritious parts are separated, and further prepared for the support of the animal. Chylification is effected by the commingling of two particular fluids with the chymous mass, and, like digestion, is essentially a chemical action. The fluids producing this important change are the bile and the pancreatic juice, the former of which is secreted by the liver, and the latter by an organ called the pancreas. These secretions find their way into the duodenum by the excretory ducts of the two glands, but their course and termination differ in the several animals we are describing. In the ox, as seen in the accompanying figure, the biliary duct, *e*, enters the intestine at some distance from the pancreatic duct, *c*. In the sheep the pancreatic joins the biliary tube before the latter penetrates the duodenum, and in the horse and the pig the two enter close to each other. These facts are

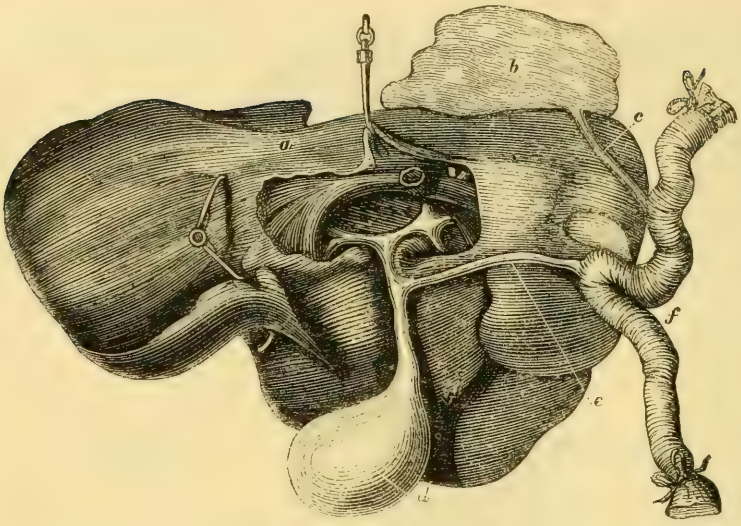


FIG. 8.

a, The Liver. *b*, The Pancreas. *c*, The Pancreatic Duct, *d*, The Gall-Bladder. *e*, The Biliary Duct. *f*, The Duodenum.

difficult of explanation, but of great importance to the comparative physiologist. It is also worthy of note that some animals possess a receptacle for the bile, called the gall-bladder, *d*, while it is wanting in others. As a rule it is not met with in the pachydermata, of which fact the horse is an example, and the pig an exception. The carnivora possess it, and it is generally present in the ruminantia, but is wanting in the camel and the deer tribe.

As before stated, the secretions of the liver and pancreas produce a separation of the chyle from the ingesta; this is precipitated upon the villous membrane of the intestines, from whence it is removed by a particular set of absorbent tubes, the lacteals, into the general circulation. These vessels are represented as lines crossing the mesentery (figs. 9 and 10); they receive their name from the milky appearance of the chyle. In their course many of them enter the mesenteric glands (see *g*, figs. 9 and 10), where the chyle is further elaborated. The lacteals unite with each other and ultimately form three or four ducts, which empty themselves into a cavity situated near to the spine, termed the *receptaculum chyli*. From this receptacle the fluid is conveyed by a canal, which, passing through the chest, receives the name of the thoracic duct, into the left jugular, or sometimes into the left axillary vein, where it is commingled with the blood.

We observed at the commencement of this lecture that the blood carries by its circulation the elements of reproduction and nutrition to every part of the body; it is therefore evident that it must suffer loss, and we have now seen how this is compensated by the food on which the animal subsists. To preserve health it is of the first importance that good and nutritious diet, such as will neither cloy the appetite, nor impair the digestive process, should be given to all animals, for, without due attention to this, disease will be a certain result. The wants of the system are recognised by two sensations, hunger and thirst; the first gives evidence of the loss of nutrient matter, the second of fluid. Hunger may be said to have its seat in the stomach, and thirst in the throat. Where health is the object, both should be satisfied, but neither indulged. Excess of nutriment accumulates in the form of fat, but fat animals are on the brink of disease. The inhalation of pure air is of equal importance to the taking of proper food, for the blood constantly requires purification as well as supply; this is effected by respiration, which, like digestion, is also a chemical process. We must not, however, enter upon this subject, but return to our description of the intestines.

The intestinal canal, although continuous, is divided into six sections; these are generally spoken of as distinct intestines, and named, *the duodenum, a; the jejunum, b; the ileum, c; the cæcum, d; the colon, e;* and *the rectum, f.* They admit likewise of a separation into large and small; the first three belong to the latter, and the last three to the former division. These viscera vary in length, even in

animals belonging to the same class, and are relatively longer in the sheep than in the ox. They are longest in the herbivora, shortest in the carnivora, and hold a middle position in the omnivora. In the horse the disproportion between the large and small bowels is very great; but in the ox, sheep, and pig, this is not the case. Like the stomachs, they have three tunics or coats: an external or serous, which secretes a fluid to prevent attrition in their movements; a middle or muscular, which maintains the peristaltic action; and an internal or villous, which promotes the absorption of the nutrient matters passing within them. As chylification is effected in the duodenum, this leads to the chyle being chiefly absorbed from the small intestines; and hence we find them thrown into countless convolutions, of which the following sketches furnish an illustration.

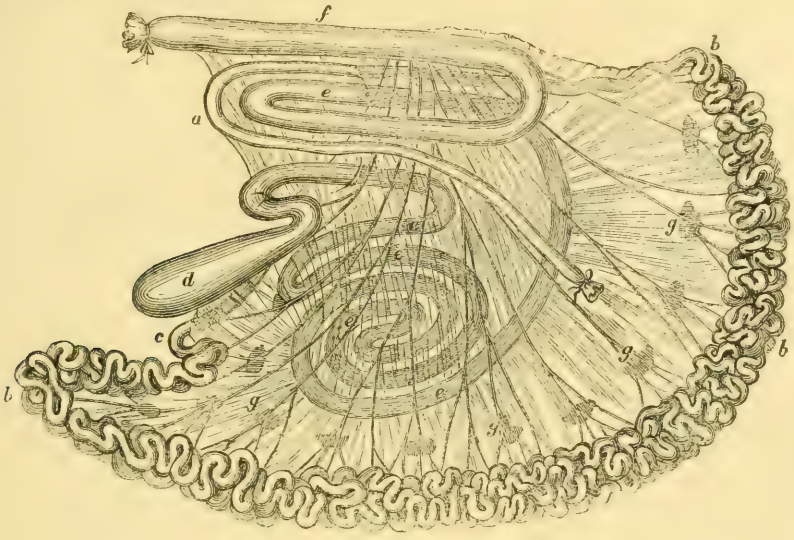


Fig. 9.

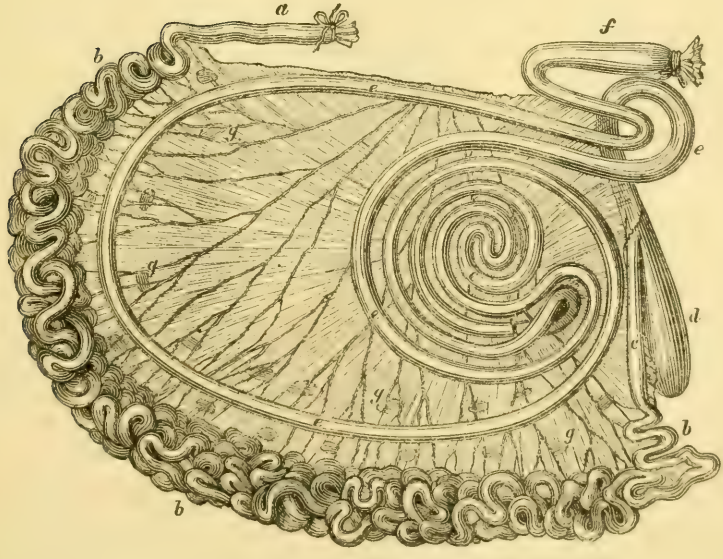


Fig. 10.

Fig. 9 gives a view of the intestines of the ox as seen on the right side; and fig. 10 those of the sheep on the left side: the references are the same in both. *a*, The duodenum; *b*, the jejunum; *c*, the ileum; *d*, the cæcum; *e*, the colon; *f*, the rectum; *g*, the mesenteric glands, with the lacteals passing to and from them. The large intestines receive the ingesta from which the nutriment has been extracted, and from them absorption of ordinary fluids takes place; the dryness of the fœculent matter will consequently depend on their length and the amount of fluid which is removed. Increase of length leads to retention, and this to augmented absorption, so that the difference in the alvine evacuations of the ox and sheep admits of an easy explanation, for in the sheep the colon is much more convoluted than in the ox (compare figs. 9 and 10).

To dwell longer on these anatomical facts would be to unnecessarily occupy your time, our object being to give a mere outline of the peculiarities of structure, that you may better understand both the functions and diseases of the organs we have been describing. We will therefore proceed to the pathological division of our lecture, and first speak of an accident of very frequent occurrence among cattle and sheep, namely, choking.

Choking, or the impaction of a foreign substance in the œsophagus, is common among oxen, more especially when they are fed on bulbous roots—a practice which is usually adopted in fattening them for the market. The improvements which have been effected in the construction of machines for cutting turnips, mangold-wurzel, &c., have materially diminished the number of these accidents; nevertheless from time to time they occur, and are attended with serious consequences. Although most cases of choking depend more on the preparation than on the kind of provender, still many arise from a habit that some oxen acquire of feeding greedily, and badly masticating their food. An ox that has once been choked is more liable to a second occurrence of the accident, and practical feeders of cattle are well aware that some bullocks will very frequently choke themselves when they are kept on tuberous roots. In cases of this description, although an operation is seldom necessary, still the animals require more than ordinary attention, for their own efforts to dislodge the obstruction may be fruitless, and, consequently, suffocation may take place.

There are two parts of the gullet where the root is most likely to be lodged, the one being at the origin of the tube from the pharynx, the other near its termination in the rumen. If the root is impacted high up, it is a proof that it is large, and great care is then required in our operations to remove it. Very large portions will rarely pass beyond the pharynx, and under such circumstances no attempt should be made to force the root downwards, for the œsophagus would assuredly be lacerated. In these cases the hand should be passed into the mouth, and carried backwards sufficiently far to lay hold of the root, and draw it out; using as a protection to the arm a gag, similar in form to an ordinary balling iron. When this proceeding is impracticable, an instrument consisting of spring forceps concealed within a hollow bulb, from which they can be thrust at pleasure, may be employed. In these operations an assistant is especially required, who should grasp the throat a little below the impacted substance, and press it towards the operator.

The distress exhibited by the animal, as well as the danger, is always in proportion to the size of the offending mass, and its situation within the gullet. When high up, the symptoms usually are, frequent cough; quick and laboured breathing; painful expirations; extended head; frequent eructations; discharge of viscid saliva; efforts to regurgitate; tympany of abdomen on the left side, accompanied with great uneasiness; acceleration of the pulse; &c. The patient rarely lies down, or experiences any relief, until the obstruction is displaced; but, on the contrary, the pain becomes increased, the abdomen more distended, and the respiration difficult; in which condition he staggers to and fro, falls, and dies from suffocation.

When the impacted substance is situated low down, there is less discharge of saliva, rarely any cough, the tympany is slight, and the breathing but little disturbed. The animal separates himself from the herd, is disinclined to move, stands poking the head, and making repeated attempts to regurgitate, which are associated with eructations.

The amount of danger may mostly be calculated by the abdominal distention; for death results from the lungs being unable to expand, in consequence of the pressure of the rumen against the diaphragm. In many cases, therefore, prior to unchoking the patient, the gaseous compounds which are disengaged from the ingesta and distend the rumen must be given an exit to, by puncturing that viscus, to prevent suffocation. The instruments employed for unchoking consist of a probang and a gag; the latter of these is to be placed in the mouth, as shown in the following sketch. The probang being also held as represented, is to be passed through the opening in the gag, and carried carefully over the dorsum of the tongue into the pharynx, and from thence pushed onwards until it reaches the root. Sufficient and well-regulated pressure is now to be made, until the obstruction yields, when it is to be driven by the instrument into the

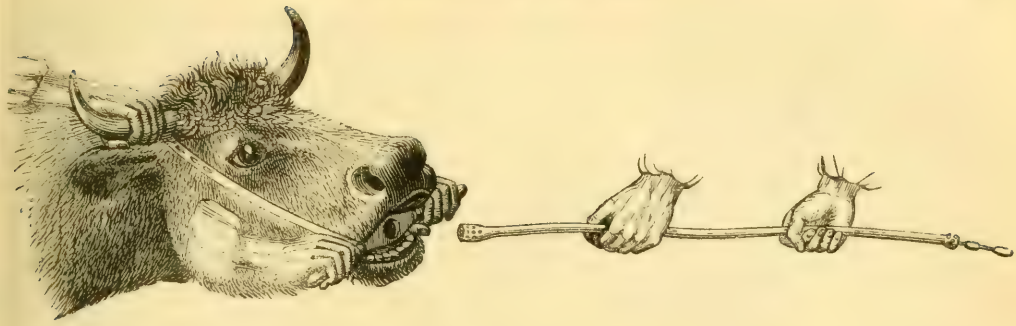


Fig. 11.

rumen. Care should always be taken *to propel the root into the first stomach*, and we should never rely on the power of the œsophagus to do this after we have succeeded in removing it from its original situation. Want of attention to this simple rule has often caused protracted suffering to the animal, and not unfrequently his death. The probangs in ordinary use are seldom of sufficient length, nor are the bulbs with which they are tipped of a proper shape: the instrument should not be less, for a moderate sized ox, than six feet and a half long, and the bulbs should be large and slightly cup-shaped. In selecting probangs, avoid those which have conical-formed bulbs, for they are likely to pass by the side of the root, and force it through the coats of the œsophagus.

The operator should always proceed steadily, and not go hastily or roughly to work; for with the greatest care the gullet will sometimes be injured, and the animal be rendered nearly valueless. The relief which immediately follows the removal of the root affords the best evidence that no injury has been done; for, should the patient experience but little mitigation of the symptoms, or should the instrument when withdrawn be found to be tinged with blood, we have sure proofs that the œsophagus is lacerated. Under such circumstances it is better to destroy the animal; for, although slight lesions of the gullet will heal, still even these are generally followed by stricture.

Two assistants at least will be required in all cases of choking: one of these should be placed on either side of the animal, holding the handle of the gag which protrudes from the side of the mouth with one hand, and the opposite horn with the other. They must also keep the head elevated, so as to bring it as near as possible in a straight line with the neck (see fig. 11). Some practitioners drench the patient with oil prior to using the probang; we, however, object to this as being not only unnecessary, but likely to cause mischief by the fluid passing into the windpipe; and for the same reason we condemn the common practice of dosing a choked beast with salt and water, or other irritating agents. Cases offering more than an ordinary amount of resistance should be committed to the care of the veterinary surgeon, who will adopt many expedients which we cannot speak of in a lecture of this description, our chief object being to lay down simple and broad rules for your guidance.

We will now offer some remarks on Acute Tympanitis, or, as it is generally called, Hove. This disease may occur at any period of the year, if cattle are subjected to a sudden alteration of diet; it, however, takes place more often in the spring and autumn. Oxen, after confinement to the straw-yard during the winter months, will be found, if at once they are turned into luxuriant grass, to greedily devour the herbage; over distention of the rumen is thus produced, which is quickly followed by tympanitis. A similar derangement of the digestive function will likewise happen when cattle are first put to turnips in the autumn. One or other of these circumstances is the more frequent origin of the affection, and therefore greater care should be exercised in the management of the animals at these particular times.

Rapid gathering of the food is necessarily associated with both imperfect mastication and insalivation; and, besides these causes of impaired digestion, the sudden repletion of the rumen weakens or suspends its ordinary peristaltic action; hence the aliment goes into a state of fermentation. Or we may explain the phenomenon by saying that, the laws of vitality being interfered with, those of chemistry come into operation, when gaseous compounds are eliminated from the ingesta which is contained in the first stomach, instead of its being therein prepared for digestion. The increased susceptibility of cattle to "hove," if turned out while the dew is on the herbage, has led to the affection being called "dew-blown," "fog-sickness," &c.

Benefit not unfrequently results from the application of these popular names, for agriculturists learn thereby the necessity of keeping their oxen from the pastures until the sun's rays have dissipated the dewy mist of the previous night.

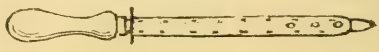
Investigation into the nature of this disease unfolds the plan of successfully treating it; and perhaps in no other instance have we a more convincing proof of the advantages which spring from the application of the science of chemistry to pathology. Hove is sudden in its attack, and speedy relief must be afforded, or the patient will be lost. The fermentation which the food undergoes is facilitated by the heat and moisture to which it is exposed while in the rumen, as well as by the causes previously alluded to. The gaseous compounds produced by the fermentative process vary according to its duration; at first carbonic acid gas is evolved, but in a short time this product gives place to carburetted hydrogen gas. We learn from this fact that the neutralizing agents must be selected with reference to the time which has elapsed since the attack. The preparations of ammonia, of which the aromatic spirit is the best, will effect the desired object at the commencement; but these should never be given in a protracted case, as they would then aggravate the evil. The carburetted hydrogen gas is effectually neutralized by chlorine, which agent can be easily and safely exhibited in the form chlorinated lime.

The dose of the ammoniacal compound will range from one to three ounces, and of the chlorinated lime from two to four drachms; a small quantity of water should be added to these medicaments, prior to either of them being administered. No delay should take place in adopting the necessary treatment, or the patient may be lost; for death in this disease, as in choking, is caused by suffocation. The inertia of the coats of the rumen, which has been previously described, will sometimes yield to such stimulants as the tincture of ginger, &c.; but these remedies ought not to be alone depended upon, for they possess no specific properties to stop the fermentative process. In conjunction with chemical agents they may be employed with great advantage, as they assist in dispelling the gas by rousing into action the muscular coat of the rumen.

To give immediate relief in tympanitis, the operation of paracentesis (puncturing the rumen) is had recourse to, and often with great benefit. Occasionally, however, but very little gaseous matter escapes through the opening, a circumstance that depends upon the non-separation of the gas in a large and distinct volume from the fermenting ingesta. Notwithstanding but very little gas may be liberated, still an advantage is gained by the operation; for the sheath of the instrument employed in making the puncture forms a ready and convenient passage through which neutralizing fluids may be injected into the stomach; thus bringing them into immediate contact with the ingesta. It is important to bear in mind that the operation should always be performed on the left side of the animal, in consequence of the inclination of the rumen to that part of the abdominal cavity. The subjoined sketch (fig. 12) exposes to view the first stomach in its natural situation. *a*, the anterior pouch; *b*, the postero-superior, *the one which is opened in these cases*; *c*, the middle; and *d*, the postero-inferior. The place of puncture is represented in fig. 13: it is situated midway between the last rib and the hip, or the anterior spinous process of the ileum, and rather more than a hand's breadth below the transverse processes of the bones of the loins.

The instrument employed is called a trocar (see fig. 14); it consists of a stilet, having a lancet-shaped point, and a canula or sheath. The stilet should be about six inches in length, and when placed within the canula it should protrude about three-fourths of an inch; its diameter may vary from three-eighths to half an inch. In performing the operation, it is best to first puncture the skin with a lancet; which having done, insert the point of the instrument in the wound, *and thrust the stilet covered by the sheath inwards and slightly downwards*, using sufficient force to penetrate the coats of the rumen; afterwards withdraw the stilet, leaving the canula in the situation. The canula is to remain until the gas has escaped, when it is to be removed, and the edges of the wound in the skin brought together by a stitch of strong silk. The subsequent treatment of the patient must be regulated according to the amount of the constitutional disturbance; in the majority of cases a strict attention to the quality of the food, and taking also especial care that the quantity is restricted, will be all that is necessary to restore the animal to health. In other instances aperient medicine, followed up by febrifuges, will be required; or a bloodletting may be necessary, if the symptoms denote the existence of inflammation. But such cases ought to be confided to the care of a veterinary surgeon.

Fig. 14.



Having already exceeded the limits of an ordinary lecture, and trespassed far too long on your valuable time, I will, in conclusion, make a few observations on Spasmodic Colic, a disease that is

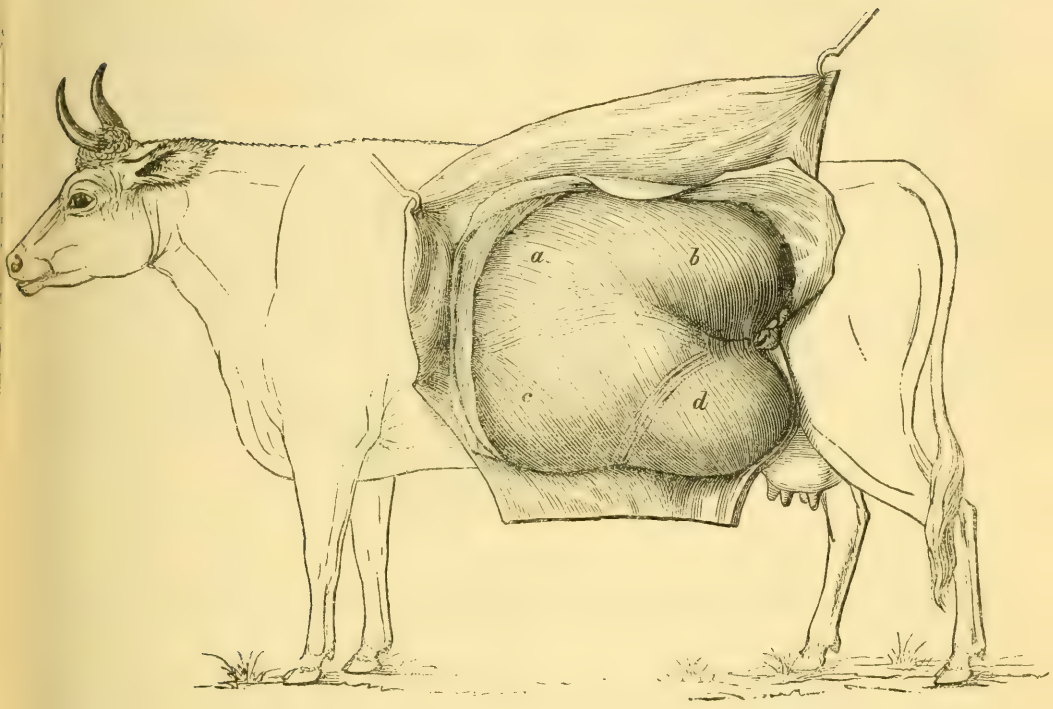


Fig. 12.

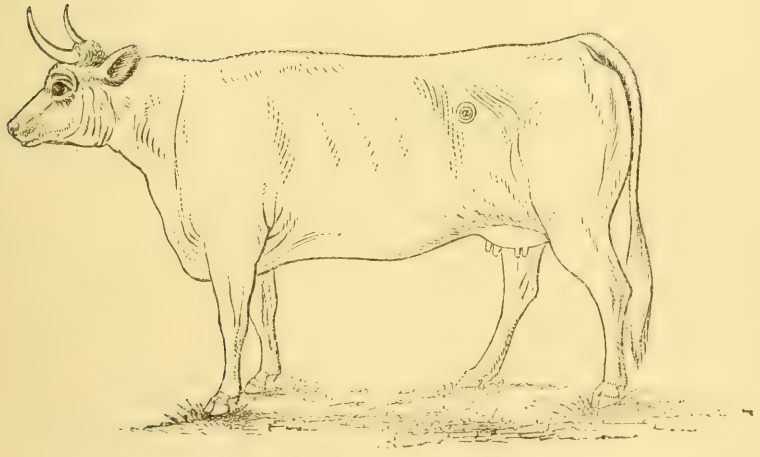


Fig. 13.

a represents the spot where the trocar should be introduced in puncturing the rumen.

ordinarily called Gripes; and it is the more necessary to do this, for this affection is frequently mistaken for some others of a very different character. Spasm in the horse is chiefly confined to the small intestines, and it may be said to essentially consist of an abnormal or inordinate contraction of the muscular coat of these viscera. In the ox and sheep, in addition to the liability of the intestinal canal to

be affected, the muscular fibres of the stomachs, more particularly the first, are occasionally the seat of the disease. The annexed sketch will illustrate the condition of the bowels when attacked with spasm; and also show a common result of the disorder, namely, intussusception, or the passage of one portion of the bowel within another.

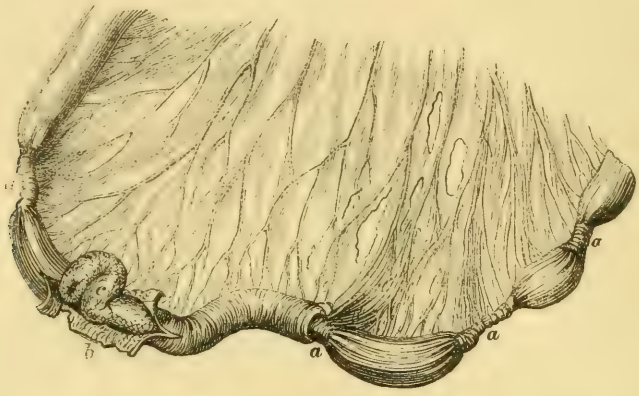


FIG. 15.

a, Contracted or diseased portions of the bowel. *b*, A portion slit open to show, *c*, the part which is intussuscepted.

We have before alluded to the peristaltic action which continually goes on in the intestines to effect the removal of the effete matter. In spasm this motion, although interrupted, is not suspended; and, the abnormal contraction of the canal diminishing its calibre, the part is thus pressed within the dilated portion, and strangulation insues. Intussusception would be an almost invariable consequence of the disorder, were it not that the mesentery, which attaches the intestines to the spine, also limits their motion. Nevertheless, when once invagination takes place, it gradually increases; the mesentery tears, and several feet of the bowel will then become impacted—a circumstance that is always attended with an aggravation of the patient's sufferings, ending in death. Oxen and sheep are less prone to intussusception than the horse, for in them the mesentery is shorter, and so arranged that the intestines can scarcely be strangulated in this manner.

The causes of spasm are various, and among the principal may be named the drinking of a large quantity of cold water when the body is heated; the partaking of coarse indigestible provender; over exertion, more especially when the stomach is loaded with food; and checked perspiration, by exposure to a low temperature or storms. The attack is generally sudden, and there are seldom any premonitory symptoms. In the horse the indications of the existence of the disease are shown by crouching; throwing the body on the ground; rolling when down, quick rising; curling the tail; stamping and pawing with the fore feet; striking at the belly with the hind ones; turning the head to the flank; &c. Neither the breathing nor the pulse is, however, much disturbed, except during the paroxysms; and it is also a peculiarity of the disorder that it is marked by intermissions of the sufferings. Besides intussusception, spasm is very likely to terminate in inflammation of the bowels, when all the symptoms are increased in severity; the pulse rises and becomes thready, the artery feeling like a vibrating cord beneath the fingers; the breathing is increased; perspirations bedew the body; the intermissions cease; and the vital powers are gradually but speedily exhausted. Want of attention to a change in the symptoms has led to many a valuable animal being sacrificed, because the medicinal agents which are best calculated to remove spasm will be productive of great mischief if given when inflammation is present, by adding to the morbid action which is going on. It is therefore apparent that cases of gripes, if not quickly yielding to the ordinary remedies, should immediately be placed under the care of a skilful practitioner, who alone is capable of deciding on the plan of treatment which is necessary to be adopted. I would wish to impress this forcibly on your minds; for, were I to attempt to give you instructions with reference to the treatment of inflammation of the bowels, I feel that I should be doing that which would be positively injurious to your interests. No one, excepting those who have made the subject of

the diseases of the lower animals their study, should ever undertake the management of such cases. With regard to spasmodic colic, it is to be remembered that it is not an inflammatory disease; even bleeding therefore, although it is a powerful relaxer of spasm, is not absolutely required under such circumstances; but when inflammation exists, this must be our chief remedy. Stimulants are admissible in the one disease, but highly prejudicial in the other. One of the best formulas to be administered in spasmodic colic is composed of Ol. Tereb. 2 oz., Spts. Æther Nitric. 1 oz., et Tinct. Opii 1 oz. This should be given early, and repeated in about an hour if relief is not obtained; after which a continuance of the pain would point out the necessity of calling in the aid of the veterinary surgeon. As an adjuvant, frictions to the abdomen should be employed; and the animal's comforts attended to as much as possible, by placing him in a roomy and well-littered stable or shed, where he can sustain no injury in his struggles during the exacerbations of the malady.

And now, having endeavoured to communicate to this meeting some information on the structure, functions, and diseases of very important organs of the body, I would, while I offer to you my best thanks for your kind attention to my imperfect observations, venture to hope that a spirit of inquiry will be awakened on this subject; for by it each will gain something, and the grand object which this noble Society labours to accomplish, namely, to blend "practice with science," will be likewise promoted.—Journal of the Royal Agricultural Society.

THE POTATO.—INCIDENTAL DISEASES.

BY J. TOWERS, MEMBER R.A.S., H.S. OF LONDON.

Disease has again attacked the crop of this fine vegetable, which had become one of the main staple products of the United Kingdom. There is no over-glossing of a fact which renders itself more apparent every day; and as this is the fourth recurrence of the malady in as many consecutive years, it will not be amiss to take a retrospective view of its course. I have ever been averse from the propagation of alarm. Could we by so doing arrest the progress of the scourge, or abate its virulence, or point to any prospective remedy, it would be equally just and kind to follow in the wake of those numberless scribes who are ever on the alert to cry "havoc." But no such power or foresight is possessed by man; and experience has confirmed the unwelcome fact, that be the condition of culture, soil, and weather what they may, disease has run its course, or failed to approach, in the slightest degree, certain sites or localities, in a way so arbitrary as to baffle conjecture.

Although we admit that, during the last four years, the malady called the potato disease, or "murrain," has been more universally present—always, however, under some change or modification of its type—yet it is proper to recall the agricultural reader's attention to many circumstances connected with the potato as a farm crop, which tended to prove at the time that there existed, during many years, some causes of anxiety. These have been forgotten or overlooked; and for this reason it is that I have determined to consult some records now in my possession, which, from their dates, will prove that disease, to a certain degree, had existed for many years previous to 1845.

During the early years of my correspondence with the late Rev. Henry Berry, then editor of the *British Farmers' Magazine*, I found occasion to notice several articles of very grave import on the subject of the "*potato rot*." This malady was described as extending more and more, particularly in the northern counties of England, and becoming the cause of very serious apprehension. Knowing the extreme sensitiveness of the farming interest, and never being able to trace the slightest symptoms of those "*failures, blanks,* and *patches*" in the rows, which indicated the decay and rottenness of just so many "sets" underground, I combatted the statements so made, as tending to rouse general alarm, grounded upon merely local affections. However, not to conceal one solitary fact that I could not but regard as a singular phenomenon, I made public, at the time, the loss of an entire sowing; which, as a curiosity, I now retrace. About the years 1833-4 and '5, the alarm in the north was most prevalent. In one of those years a friend gave me a few dozens of a potato so intensely purple as almost to be called black. In boiling, the pulp was mealy, and in itself white; but it became stained by the colouring matter of the peel. The larger tubers were cut into sets, the smaller were left entire: they were carefully planted in a deep drill, without covering manure; and after the usual time all sprouted, the young shoots emerging of a deep, but healthy purple tint. These grew regularly till about six inches high; then growth

ceased, and gradually a sickly yellow tinting appeared; the plants became weak, flaccid, and without a single exception all perished. I then opened the ground; not a vestige of tuber or set remained; the whole had vanished. Now, in this instance, a total decomposition (rottenness or decay is a feeble term) had occurred; but, as to the cause, I was, and am, completely in the dark. A bald fact of the kind is of no great import; but, as having occurred to myself, I deemed it worthy of mention. Personally, during the fourteen years wherein I grew the potato pretty largely—and, among others, about a dozen of the fine varieties raised by Thomas Andrew Knight, and sent to me direct from Dounton Castle—I never observed an instance of failure to any extent around my property in Berkshire.

I now approach the important evidence adduced by a Mr. Niven, and published in the *Irish Farmers' Magazine*, from which the article was extracted by Messrs. Baxter, of Lewes, who published it in their *Agricultural and Horticultural Annual* for the year 1836. The date, then, we will take as 1835. As to the failure itself, and its cause or causes, Mr. Niven must speak for himself. He says: "Amidst a variety of conflicting opinions, arising from the mystery under which the matter was involved, I was led to institute a course of experiments, in order to ascertain the most certain and safe method of culture.

"1. It has been asserted that the soil in Ireland, having been so much cropped with the potato, has, in consequence of *certain noxious matter thrown off by the plant*, become unfavourable to the growth of the root.

"2. That the potato has become infected with a *minute fungus* destructive of the principle of vegetation in the bulb.

"3. That the failure arises from the effects of *sea water*, in the case of imported seed.

"4. That, having been planted in dry, hot weather, of which there has been so much of late years—the manure also, from its own nature and the state of the weather, was more or less *over heated*—the potatoes suffered accordingly."

Mr. Niven repudiated all these conjectures, as being generally untenable; but it having occurred to him that the failure might frequently arise from the *tubers being cut*, he planted with *entire potatoes two divisions* of the nine that he arranged in 1834, in a piece of land "that had not been at any former period cultivated for the potato; the other seven divisions had the tubers cut in every possible way—across, lengthwise, diagonally, at the rose or crown, root-end, and in one instance he took *whole* potatoes, *the eyes picked out*, excepting those at the top. Each sub-division of the land comprised 260 square yards, and received two hundred weight of the potatoes, cut or entire. Consequently, the experiment was on a large scale; and the soil being a *dry* gravelly loam, the subsoil a silicious limestone, was the best that could be employed to secure the soundness of the tuber.

It may be proper to observe that the disease called the *rot* in our northern countries, and described by Mr. Niven as *failure*, did not, in any material degree, correspond with the malady of 1845, 1846, and, I fear, of the present season. It referred to a total decay of the *cut sets* in the ground, which prevented vegetation, and therefore left blanks and patches in a field to a greater or less extent.

However, though that failure neither throws light upon the cause, proximate or remote, of the present general epidemic, it instructs us that the constitution of the potato had received injury, and therefore became liable to affections which had not previously existed.

I shall now present a cursory view of the progress of the growth at the end of May, one calendar month after the plantation had been made, and of the final results, as most carefully tabulated by Mr. Niven.

Nos. 1 and 9 the former planted with large, and the latter with middle-sized, *entire* tubes—produced regular, vigorous plants, with scarcely a blank.

No. 2.—Eyes picked out, except at the top; *whole*; very irregular; failure, one-third.

No. 3.—Bottom, or root-end sets very irregular; failure of two-thirds.

No. 4.—Cut lengthways; very irregular; failure, about one-third.

No. 5.—Cut across the rose ends; irregular; failure, about one-fifth.

No. 6.—Cut in sets; the bottom sets irregular; failure, about one-eighth.

No. 7.—Rose-end sets; cut in detail; irregular failure, about one-half.

No. 8.—Sets from the middle; very irregular; failure, about one-half.

The entire large tubers were planted 3 ft. asunder; those of Nos. 2 and 9, 18 and 20 in. asunder; the sets of 3, 4, 5, at 18 in.; and those of 6, 7, 8, at 8-inch distances in the rows.

At the time of digging, No. 1 yielded 14 cwt. 6 stones, large and coarse; No. 2, 9 cwt. 2½ stones; No. 3, 6 cwt. 6½ stones; No. 4, 10 cwt. 3 stones; No. 5, 14 cwt. 7 stones; No. 6, 13 cwt. 1 stone; No. 7, 14 cwt. 7 stones; No. 8, 7 cwt. 5 stones; and No. 9 (small entire tubers), 14 cwt. 7 stones, middle size and excellent. The yield from the rose ends was good; but all the other sets yielded potatoes of inferior or bad quality.

From the results Mr. Niven concluded that the failure did not originate in the soil, or in any disease of the tubers. 2nd—That, independent of dis-

ease, potatoes cut into sets would yield a greater produce than the same weight of entire potatoes. But, 3rd—That, as the cut sets *did* fail, it appeared that the whole potato was to be preferred, and especially that of a middle size.

Mr. Niven conceived that the remote cause of the then failures arose chiefly from "*atmospheric* or electric influence, acting upon a cut or bruised tuber, producing an immediate change in the consistency of the pulp, to the destruction of the principle of vegetation."

This is the only theoretic principle which I judge it needful to adduce from the authority of the article; and I therefore quit it, in order to advert to the *Book of the Farm*, edition 1, p. 671, wherein Mr. Stephens mentions the disease, called by him the *failure*, or *taint*, which destroyed the vital powers of the sets. Several authors are mentioned; among these are Mr. Shirreff, Mr. Knight, of Dawnton, and Dr. Hunter. Mr. Shirreff adopts the general doctrine broached by Mr. Knight—that "the maximum of the duration of life of any vegetable or animal is predetermined by nature, under whatever circumstances the individual may be placed; the *minimum*, on the other hand, is determined by those very circumstances. Admitting, then, that a potato might re-produce itself from tubers, for a great number of years, in the shady woods of Peru, it seems destined to become abortive in the cultivated champaign of Britain; insomuch that not a single healthy plant of any sort of potato that yields berries, and was in culture 20 years ago, can now be produced."

The potato *has* been partially worn out, and, moreover, has been cruelly treated; but neither these, nor any other attested proofs of debility and taint of tuber, can interpret, or even be made to bear upon, the sweeping anomalous malady of 1845 and 1846. The only authority that I can venture to cite is that of the manager, or foreman, of Messrs. Rollison's American grounds, on the south border of Mitcham Common. That person assured me, only a few days ago, that 40 or more years since, his father had lost many potatoes by a disease which, to the best of his recollection, assumed much the same appearance as the one now in a state of rapid progress, in the haulm and foliage, as well as in the tuber. He believed that its source must be traced to *the soil*; and this he partly inferred from the attack upon the leaves and fruit of the apple, and also (as I there observed in many instances) upon the rhododendrons; numbers of which had their foliage more or less blackened to half the length of the leaves: these at first became soft and leathery, but gradually the decayed portions dried up.

As a curious coincidence, the blackberry bushes, which two or three weeks ago gave promise of a vast and early crop, have suddenly dried; every leaf has changed to a rusty brown, and not one living berry remains. This may or may not be general; but, on the 11th inst., the whole of an extensive plot on the Brighton line, by Coomb-lane, whereon great numbers of most fertile bushes abounded, now presents one scene of desolation. I have not had opportunity to search farther.

We cannot discover causes; they are invisible. Yet, with Dr. Emm. Pallas, physician of the University of Paris, I must infer that all genuine epidemics have their origin in electro-magnetic disturbances, producing chemical action among the elements of water and decaying vegetable matter. No one can conceive the extent to which changes so wrought can proceed, or comprehend the limits of fungous development to which they may give rise. Naturally, judging from external appearance, one might be inclined to ascribe the diseases of potatoes and other vegetable beings to atmospheric poisons; but, since perusing Mr. H. Davis's able statements, founded upon extensive and minute research, I feel very much inclined to ascribe the prevailing malady of this year (a malady which, by-the-by, corresponds in extent to the greatly increased breadth of potatoes planted) to the disease of the tubers. He states that he has traced the *earliest* symptoms to *those tubers*, or on the first shoots close to them. The *taint* is most insidious, and its presence was to be suspected. Let us, at all events, be warned ere we plant again.

August 14.

RAILWAY NOTES.

By a Member of the Royal Agricultural Society of England.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—Having, in the early part of August, been a traveller along the Great Western and South Western Railways, I was struck with the great variation in the farming of the districts through which I passed; and, with your permission, I will endeavour to give you the substance of the information gleaned from my fellow-travellers, and from the casual observation which the rapid mode of

conveyance allows a traveller to obtain of the country.

It is impossible, from the passing glance obtained from a railway carriage, to view, much less to remember, the many objects of interest that present themselves in rapid succession; but having had occasion to stop at many intermediate stations, and making a free use of my note-book, I shall now proceed to give an analysis of its contents, so far as they refer to the farming of the country, the state of the crops, and the improvement of which the country appears capable. I must, however, crave the indulgence of your readers for any misstatements that may occur from erroneous information, or from the superficial means of making observation.

I shall date my starting point from the neighbourhood of Lymington, and the first object of interest is the *New Forest*, through a portion of which we pass on our way to Southampton—a district more celebrated for providing the timber for England's wooden walls than for supplying the staff of life to its inhabitants.

The soil appears to be a tertiary deposit of sand and gravel, intermixed with occasional beds of clay. That portion through which the railway passes bore evident marks of sterility and bad management; the soil (sand or gravel) containing oxide of iron, in many parts so saturated with water that it is almost in a state of nature; the trees are stunted; the open tracts—"lawns"—partly covered with heath, are wet and slushy, and in many places the growth and decay of amphibious plants have accumulated into peat bogs. These "lawns" afford subsistence to the crown deer, and to the cattle which the foresters who reside in the villages on the borders of the forest have the right of turning in.

The management, or rather mismanagement, of the New Forest having lately engaged the attention of the public, I cannot do better than give an extract on the subject from the Daily News of August 17th, which bears out my inquiries:—

"The rights and privileges of the crown in the New Forest appear to be limited, as far as we can learn, to planting young trees, which seldom arrive at maturity; and stocking the forest with deer, for the keepers to kill at the fitting season. The property of the crown in the soil is subject to the rights of the commoners, who may turn in quantities of cattle; and the rights of the encroachers, who are the only parties making anything of the land. The crown deer and the commoners' cattle struggle for the herbage, and the young trees get destroyed, which is all for the benefit of those who have the planting of them. The crown managers pay over and over again for the costs of such plantation; and they also pay all the expenses of the keepers, who are not, however, officers of their appointment, or in any way subject to their control. Thus the crown incurs enormous costs without deriving any corresponding benefit.

"On the borders of the forest there is, of course, a population; but, as the ground is untilled, the population have little or no employment. Crown land, moreover, being extra-parochial, little or nothing is done for the education of this people; and they consequently grow up, generation after generation, a rude, ill-informed class, with little moral or religious training. A vast amount of crime is the consequence. In fact, the very nature of the property, the way the deer and timber are exposed, and the loose administration of forest law when it clashes with the interests of the more wealthy, seem to have induced a feeling among this population that depredations on the property of the crown constitute no offence. The social evils of these parts of the kingdom are consequently almost unparalleled."

The editor of the Daily News takes a strong view of the improvements required in the New Forest; but even an accidental view, taken by a traveller from a railway carriage, will testify to the truth of his remarks.

The foresters may deem their rights, exercised legally and illegally, of too great importance to be set aside by a moderate compensation; for the present race of uneducated inhabitants would undoubtedly prefer a lazy subsistence—in too many cases derived from depredations upon the crown property—to a life of industry, which would become their portion if the soil was reclaimed and cultivated. But, if private rights and interests could be set aside by an equitable adjustment, the improvement of public property would be an easier task than it appears to be at present. The importance of such an improvement can be estimated when it is known that it might extend over a tract of country approaching to a hundred thousand acres in extent.

One advance towards improvement is shown in the draining operations now in progress, under the able direction of Mr. Parkes. But draining alone will not be sufficient to reclaim these unprofitable wastes; they require the skilful management and resources of first-rate arable farming, and not the half-measures that can only be adopted so long as the land is under the conflicting interests of a common right of pasturage.

Draining, in time, may work an improvement in the herbage, and in the growth of timber; but it will hardly supply the ingredients of a fertile soil: many of these appear to be wanting, that might readily be supplied by the admixture of soils—a practice so advantageous to the light land cultivator, and which the beds of clay intermingling

with sands and gravel would render of easy application.

Leaving the forest, we arrive at Redbridge station, close to which is a ship-building yard; and leaving this behind us, we pass along the upper portion of the Southampton Water, which at high tide shows a broad expanse of shallow water, but at low tide a narrow river is seen, bordered on each side by an extensive and useless tract of half land, half water; and here, again, I believe the expense of reclaiming by embanking and pump draining would be amply repaid by the extent of land reclaimed.

At the Southampton station I observed several trucks filled with oxen imported from Spain: they are of a dun colour, and appear to be of coarse and inferior make and quality. I was informed by a fellow-traveller that they are chiefly old working cattle: their quiet and docile behaviour indicate this, and their age and quality mark the truth of the old adage that tells us that the "proof of the pudding is in the eating"—a quality warranted by the tough and indigestible character of the beef. Leaving the *foreigners*, we proceed onwards towards London, and find the country between Southampton and Bishopstoke well wooded, and the land of a good or medium quality, with some water meadows, the hay upon which is not entirely carried.

We now approach the chalk formation, as shown by the railway cuttings as we pass the Winchester, Andover Road, Basingstoke, and Winchfield stations: this formation covers a great extent of Hampshire, and gives a light character to the soil: where the chalk is near the surface, the land is poor; but where the surface is of fair depth above the chalk, it appears to be good friable land, of easy cultivation, and capable, with high farming, of producing with abundance the usual crops grown on a four-course rotation.

The great proportion of the land is under arable culture, the crops generally light, and sheep-farming with Hampshire downs is the prevailing system. A portion of land still remains in natural grass, but the produce appears to be very small, though it affords useful keep for a breeding flock of sheep. Water meadows are seen in the hollows.

Turnips are either sown broadcast or drilled on the flat; they are generally foul, and in many places are an inferior crop, though they occupy a greater breadth than in any other district that will come under my notice. Sainfoin is grown, and affords useful food for sheep; but the length of time it remains down gives great encouragement for the growth of weeds. From a rough guess, I would estimate the produce of wheat at 20 bushels, barley 28 bushels, and oats 30 bushels per acre; turnips, by their present appearance, indicate a crop varying from 5 to 18 tons per acre, exclusive of tops.

Such is the general nature of the farming; but, on referring to my note-book, I find mentioned, between Bishopstoke and Winchester — "Light crops on inferior land—the spring corn backward." Going onwards to Andover Road, the land is open, and of a light chalky character; the crops light. Between Andover Road and Basingstoke the soil partakes of the same character; a good piece of turnips is seen now and then, but it is the exception, and not the rule; grain crops are better than in the country through which we have just passed.

Between Basingstoke and Winchfield the land is of better staple; the crops of wheat, beans, and peas are very fair, and the pasture and water meadows good.

The district from Southampton to Basingstoke and Winchfield appears capable of vast improvement: it does not require that extraordinary outlay of capital in draining, road-making, and removing superfluous hedge-rows, which other districts demand of the landlord, but it requires a more liberal system of farming to be generally practised.

Whether the farmers are prevented from doing justice to their land from a want of capital, a want of security, or a want of knowledge, I know not; but many will bear me out in the opinion that I entertain, that there is land in Norfolk, Suffolk, Lincolnshire, and Cambridgeshire, naturally of the same inferior kind, the produce from which is much greater in beef and mutton, and, as a matter of course, of corn also.

It appears to me that hardly sufficient use is yet made by the agriculturists of this district, of the advantages afforded by railway communication for securing a market for fat stock. If some of the cattle and sheep which now supply the London market in such numbers from Lincolnshire and Norfolk, were displaced by cattle and sheep from the country bordering on the South Western railway, I have no doubt but the Hampshire farmers would find their soil producing far more luxuriant crops, that they themselves would be obtaining far more profitable returns from their capital, and that they would be able and willing to pay liberal landlords, who give security for the tenants' improvements, a far higher rent than they do at present.

Having to cross the country to Reading, I left the rail at Winchfield, and mounted an antique stage coach, drawn by the remnants of two hacks that had at one time seen better days. If time is always an object, the contrast between rail and coach travelling would have been unfavourable to the latter; for the time occupied in travelling from Winchfield to Reading, a distance of 15 miles (not

including the three miles' extra ride which the liberal coach proprietor gives his passengers, by calling upon the Duke of Wellington, at Strathfieldsaye, for his Grace's London supply of garden stuff), equalled the time of travelling by express train from London to Gloucester, a distance of 114 miles.

From Winchfield to Mattingley, the seat of Sir John Cope, Bart., and Heckfield Place, the seat of the Speaker of the House of Commons, the soil consists of heathy commons, of trifling value in their present unenclosed and uncultivated state. This tract of waste land is, however, enlivened by the parks surrounding the mansions of several landed proprietors.

At Swallowfield, and as we approach Reading, the land improves in quality, being a good loam, cultivated in many places upon narrow ridges of 10 or 12 furrows each. The crops of wheat, though rather late, will probably average 32 bushels per acre; and the swedes are looking remarkably well, and promise a crop of from 14 to 20 tons per acre.

Returning to Winchfield I continued my journey to London. For a short distance from Winchfield, the land continues of a medium quality, with swedes and turnips; but as we approach Farnborough, and so on for some way beyond the Guildford Junction, heath and waste land again cover the surface of the country; we see the sterile sands and gravels of Bagshot heath, affording but a scanty subsistence to a few poor cows and horses. In many parts the sand is covered with a coating of dry, inert, heathy matter; in others moisture has aided the accumulation of peat, used for fuel in some places.

As we draw nearer London a better soil is seen, and cultivation again resumes its dominion, aided by the stimulating manures derived from the waste of the great English market for agricultural produce. Here the crops of wheat are good; oats are an inferior crop; and the crops of roots occupy a fair breadth of land, and wear a promising appearance.

Within a mile or two of London the land is cultivated as market gardens, and a never failing market, and a plentiful supply of manure, enable the gardeners to obtain a livelihood from a small tract of ground.

Once in London, the farmer's source of wonder is the endless line of human beings who throng the streets, each intent upon his own business. The farmer, however, may find many objects of interest that will remind him of the fields he has left behind: he may visit Mark-lane, that weekly guide of his market sales; and in Smithfield he may learn the justice of the opinion that has lately been entertained that there is not sufficient accommodation for the cattle and sheep sent there to be sold, and that the want of room is a cause of great and unnecessary cruelty being exercised upon the animals; whilst the nuisance and danger to the inhabitants from cattle being driven into the centre of a densely populated city, and the extent of disease caused by the noxious exhalations arising from the offal of so many cattle that are daily slaughtered, and which the most perfect sewerage would, in some measure, fail to remove, are objections to the continuance of the market on its present site, that cause the visitor to wonder why so great a nuisance has so long been allowed to exist. The Islington cattle market, the result of the speculation of a private individual, with the view of removing the Smithfield nuisance, is also an object worthy of a visit—a great extent of ground is paved and laid out in pens of iron for sheep, and sheds and other accommodation for cattle; and altogether a vast amount of money has been expended, and, unfortunately, for a useless purpose. The farmer may also visit the great dairy establishments, and take a lesson from their unnatural, though profitable, system of feeding.

But there is one object to which he may give his especial attention, for in course of time it will become as important to the cultivation of the land, as the present artificial manures now are—I allude to the loss of the sewage manure derived from the consumption of such vast quantities of food by thousands and thousands who reside in this great metropolis. The Metropolitan Sewage Manure Company are, I believe, preparing a station for the distribution of the sewage manure, in a liquid form, to the market gardens and farms, over a tract of some 60,000 acres in extent. But could not this fertilizing agent be rendered available to distant farms, by the method lately proposed of mixing it with peat charcoal, which has been found to remove its noxious qualities?

In London a farmer from a remote district feels almost like a fish out of water, and he always turns homeward with increased contentment: with this opinion, I shall bid farewell to its ceaseless din, and wend my way, by the Great Western railway, along the valley of the Thames, and endeavour to describe a country which affords the traveller scenes of beauty, a fertile soil, and general good cultivation—more so perhaps than upon any other line of railway. Taking the country from London till we approach Farringdon Road station we may put the crops of wheat at an average of 32 bushels, of barley 40 bushels, and of beans 40 bushels per acre. The crop of wheat is generally good, though in many places it is lodged, which may have some effect upon its quality. The practice of bagging wheat appears to be almost universal. The rich meadows which border the Thames afford an abundant produce.

From Reading to Wallingford the land rises right and left to the chalk hills; the crops are early and

good. At Wallingford there are deep cuttings through the chalk.

From the Didcot station, and in the neighbourhood of Wantage, is capital wheat and bean land. Winter beans are much grown, and are said to be a large produce—they appeared to have been cut some days. The old Berkshire plough, with high gallows and wheels, is preferred by many farmers; but if there is a necessity of employing three horses it must arise from the plough, and not from the soil—at least, by far the greater portion of the land could be ploughed with two horses where three and four are used.

A few miles before reaching the Farrington Road station, the system changes from arable to pasture farming; this continues till we reach Swindon. The pasture is good, and the district noted for cheese and butter making; but the hedges are large and straggling. Hay harvest is not completed. The contrast between arable and grass farming is worthy of notice. We have just passed a district covered with abundant crops of grain ripe for the harvest, and affording labour to hundreds of willing labourers; while here the anxious and prolonged hay harvest is yet unfinished, and though the crop is half spoiled from exposure to the weather, a labourer is scarcely to be seen.

Turning from Swindon to the line that leads to Gloucester, we pass some good land; but generally it is of a tenacious nature, and badly cultivated. The fields are small, and the hedges large.

The oolite formation of the Cotswold Hills appears as we approach Cirencester; and it is at once distinguished by the stone walls which divide the extensive fields, and also by the limestone cuttings, and bare appearance of the country. Though high and exposed—being from 500 to 1,000 feet above the level of the sea—and the soil thin and brashy, yet it affords a soil well adapted for green crops and for sheep-farming. The noted flocks of Messrs. Large, Smith, Hewer, Handy, and those of almost every farmer of the Cotswold Hills, give great credit to the district. The crops of wheat appear something like 20 bushels; of barley, 28 bushels; of oats, 32 bushels per acre.

Cirencester has lately become known to the agricultural world as the seat of the first English agricultural college—an institution which has long been wanting in this country; and the instruction which is there given will doubtless ere long open the eyes of a rising generation of landlords and farmers to that improvement of which even the best cultivated districts are susceptible.

It is said the farmers of Gloucestershire do not give their college that support which every discerning visitor will at once see that it deserves. But it is not upon the farmers of Gloucestershire alone that the Agricultural College looks for support: it depends for assistance from every English landlord and every English farmer. It is said the increased fee of £80 per ann., rendered necessary by the demands of a higher class of students, has changed the farmers' to a landlords' college, by placing it above the means of a tenant-farmer. I do not believe this to be the case universally, as there are many opulent farmers who will readily give £80 to obtain the advantages of a year's scientific instruction for their sons, when they become convinced, as I have been, of the practical tendency of that instruction. However, granting this to be the case, what benefit will accrue to the farmer and the country from the agricultural instruction of the sons of landlords and of the sons of land-agents?

Let the landlord learn his own business; let him send his own sons, or the sons of his agent, to be practically instructed; and both landlord and tenant will reap the benefit of the instruction. A landlord who has learned his business will aid his tenantry in a tenfold degree, as he will know that whatever is injurious to an honest tenant is injurious to a landlord also. He will see and appreciate the energy and talents of his tenantry, and will not allow those minor considerations to interfere as obstacles to the improvement of the soil.

I will not enter into a lengthened discussion of the merits of this admirable institution, but will advise every farmer to see for himself, and during his visit to obtain permission to attend one or more of the lectures; and I have no doubt he will come away convinced that the system of teaching practical, scientific farming is something quite as essential to the farmer as the elementary instruction given in a common school, or the practical instruction learned in the field.

But, having passed the subterraneous dreariness of the Sapperton tunnel, where, being unable to use our eyes, our thoughts were occupied with the benefits to be derived from sound farming education, our attention is turned to another scene. We are now in the golden valley of Sapperton—a narrow valley of great beauty, with hills rising abruptly on each side, whilst the hanging woods of beech give a charm to the scene which it is impossible for me to describe.

The West of England cloth factories occupy this valley as we continue our course to Stroud. We now enter upon the broad vales of Gloucestershire, consisting generally of a wet, clayey soil, on the blue lias formation. A good deal of the land is in grass; and, considering the expense of cultivation must be enormous, from the fact of their seldom employing less than four horses to a plough, it becomes a matter of wonder that grass-farming is not more universally practised than it

now is. The land is ploughed in corduroy ridges, once the only method of keeping the land dry enough to secure a partial crop; but now they are objectionable, as, laid up in this manner, the land must necessarily require more horse and manual labour, besides producing uneven and irregular crops, that side of the land that inclines towards the sun being some days earlier than the side that inclines from it.

Some of the crops are good, and tolerably early; but, taking the whole district, I would not estimate the wheat crop at more than 26 bushels; barley, about the same; and beans, about 32 bushels per acre. Roots are badly managed.

Having now reached my destination, I must conclude, hoping ere long to give you an analysis of my notes upon some other part of the country. From my present tour, I may come to the conclusion that the labourers of this country need not want for employment, so long as so many broad acres remain almost in a state of nature, or whilst so few farms are to be seen that have arrived at their highest point of production.

August, 1848.

NEWCASTLE FARMERS' CLUB.

AUGUST MEETING, 1848.

The monthly meeting was held on Saturday, August 5, 1848 (Sir M. W. Ridley, Bart., in the chair).

Mr. Nicholas Morris, of Washington, was elected a member; and the secretary, Mr. W. Glover, announced that specimens of fossil guano had been presented by Mr. T. L. Colbeck; and, by Mr. Kell, a catalogue of the implements exhibited at the Royal Agricultural Society's late meeting at York.

Mr. R. W. Matthews, of Beamish, read a paper "On Bare Fallowing Land."

In complying (said he) with the request of a few friends, to write an article for the Newcastle Farmers' Club, I feel the utmost diffidence. My object in becoming a member was to learn, not to teach; and it is improbable that I shall be able to propound anything which will add to the information of the gentlemen who form this club, being unacquainted with those sciences which are indispensable as bases to a sound knowledge of agriculture—the only knowledge I possess on the subject being simply that which has been derived from observation and experience. But there is another and a different class of farmers in this neighbourhood (who will be hereafter alluded to), who do not profess the same education, and have not access to the same sources of information; and if, in the course of the following observations, I can give a single hint which may prove useful to any of them, I shall feel amply repaid. I propose to divide the subject into three heads: first, to show that a bare fallow is peculiarly adapted to strong clay lands; secondly, to point out the advantages of the occasional use of it as a relief on turnip soils; and, thirdly, to attempt to prove that it must continue to be the general mode of cultivation on inferior lands which are of no decided character. The chief advantage of a bare fallow consists in the farmer having the whole of the summer to cultivate; that is, to clean and prepare his land for the succeeding course of crops —to meliorate it, by exposure to the sun and atmospheric air, in a manner which he can *not* do if it be placed under *green crop*; because he is obliged to break it down and pulverize it early in the spring by mechanical force, to be ready so early as April for potatoes, by the middle of May if he intended to sow swedes, and from the first to the twentieth of June for other kinds of turnips. Much may be done by horse and hand-hoeing the green crop; but it must be admitted that the bare fallow is the most perfect mode of cultivation. Firstly, and as regards strong clay lands.—This land, from its nature, is better adapted for the production of wheat than of other grain; and the ordinary mode of preparation has been a summer fallow. I believe it has been proposed, by thorough-draining and subsoiling, to grow turnips and potatoes upon clay lands. It is certain that great improvement may be made by those operations: under-water may be carried off; surface water may be made to percolate more quickly; the temperature, and even the texture of the soil, may in a measure be improved; but the constituent parts of the original deposit will remain substantially the same—their relative proportions unchanged. It is too adhesive, too retentive of moisture, to suit those crops; and the intermixing it with a large quantity of extraneous matter, such as sand, would alone materially alter it. If this kind of land has never grown turnips, and a favourable season occur for getting it pulverized, it will grow one crop of large, heavy bulbs—perhaps a second. The change will call inert particles of the soil into action; but it will be found to fall off. There is also some difficulty of carting off the crop without injury to the land. Therefore it is that I conclude that wheat, beans, and clover are

the natural productions of this kind of land--that a bare fallow is the best preparation for the course, and hence must continue an important part of our system of agriculture. Secondly.—A bare fallow is occasionally useful as a relief to turnip soils. The great demand for beef and mutton in England, notwithstanding the depressed state of manufactures and commerce, and the conviction that the foreigners cannot export those articles so as to affect the prices in our markets to so great an extent as grain, render the production of *green crop* more lucrative, and enhance the value of turnip soils. But if these considerations induce the English farmer to push the growing of turnips to the verge of possibility, they form an equally-powerful argument that he should not deteriorate those fine lands, suitable for the production of turnips, by a too-frequent repetition of the crop; but, on the contrary, that he should use every means in his power to maintain them in full vigour, and in a high state of cultivation. This, of all kinds of land, from the facility with which it may be wrought, and the variety of crop which it may be made to produce, is the most delightful to farm; let him who possesses it be thankful that "the lines have fallen to him in such pleasant places." When land has been for many successive rounds under turnips, followed by barley, the alternation of a bare fallow, succeeded by wheat, will be found highly beneficial. Change, next to good cultivation and the proper application of manures, is the life of crops—perhaps as necessary as either of the former. From the large breadth of turnips now grown, it must necessarily follow that a great portion of them are raised by the use of artificial manure; and a return is made to the land, to prepare it for the succeeding crop (generally barley), by depasturing all or part of them upon the land with sheep—a most excellent plan; but I am of opinion that an occasional bare fallow, together with the application of a dressing of farm-yard dung, to be followed by a wheat crop, is a great improvement upon it. Firstly, the fallow is so, for the reason already given—the greater exposure to atmospheric influences; secondly, because the manure left by the sheep in eating the turnips on the land, rich as it is in fertilizing ingredients, does not contain so much of the bones of plants (carbon) as the farm-yard manure, for straw (or any vegetable matter) is the most direct way of restoring this necessary article to the land; and lastly, as it is agreed that no one plant feeds exactly on the same particles of soil as another, I am inclined to think that the substitution of a wheat for a barley crop will be useful. After this change of treatment and of crop, the land will produce, with renewed vigour, the turnip and barley crops as they come in course during the following round.

In taking up the third part of my subject, to which I would chiefly address myself—viz., the advantage of bare fallowing upon lands of no decided character—I wish to explain what is intended by that term. I mean lands which are not so strong as to deserve the appellation of clay lands, and yet which do not contain a sufficient quantity of sand or gravel, mixed up either with the soil or subsoil, to render them sufficiently light and pervious, so as to entitle them to be called turnip-soils; and of such, a great part of the inferior lands in the hilly part of the county of Durham (with which I am best acquainted) is composed—taking it from the valley through which the turnpike-road passes from Newcastle to Durham, thence westward nearly to the moors. In this tract is found almost every variety of soil and subsoil. In some places, on the table land on the top of the hills (and here I may observe, you find the best patches of soil in the district on the table land), the subsoil consists of freestone rock; in other places of clay; in others of sand and gravel; but, in general, of layers of clay interspersed with deposits of sand and gravel. In some places the surface-soil inclines to clay; in others it is light; partaking in most instances of the nature of the matter which forms the subsoil upon which it lies. This district is, generally speaking, divided into farms of less than 200 acres each, occupied by a most industrious class of farmers, who were many years ago thus described by a writer on agriculture: "They rise early, late take rest, and eat the bread of carefulness." Economy is the leading principle in their management; but, with all their qualifications, in too many instances their farms would not belong to the category of "well-managed farms," lately so ably described by a member of this club. In this district, the lands suited to the cultivation of turnips are partially situated, and limited in extent; and the farmer often wastes his time, his money, and his energies, in attempting to grow them upon land totally unfit for the purpose. A man who has, say, thirty acres of fallow, may often be seen spending the whole of the spring months, after oat seed-time, in preparing land for an acre of potatoes, and four or five of turnips, to the neglect of his fallow—which may be seen green as a fog with couch-grass, and all manner of weeds, where a botanist might revel for days together—and the fallow seldom gets any of his attention, not even a stirring, until after the turnips are sown, towards the latter end of June. The whole has been devoted to the preparation for growing five or six acres of green crop, where the labour of months may be undone by a heavy shower of rain or a fortnight's drought; for this kind of land will not bear the slightest excess of either; and, lastly, he applies twenty loads of rotten dung per acre

always the best he has), to raise half a crop of turnips, which would have well manured twice that extent of bare fallow. If no turnips were grown upon such lands as are here described—if the oats, peas, and barley raised upon the farm, were consumed by the cattle, and the sum usually spent in attempting to grow turnips expended in the purchase of oil-cake, &c., it would in the end be to the benefit of the farmer and the improvement of the land. In advocating the use of a bare fallow, perhaps I shall best illustrate that mode of culture by describing the process. Let the land be fellowed before winter, in as dry a state as you can; cut grips in it, to carry off any excess of water in the winter; do not come upon it the following spring until it be dry; give it a true good stirring, to the full depth of the fellowing; furrow across, if the ridges run north and south—which all ridges ought to do, where the inclination of the land (that is, the angle which the surface forms with the horizon) will permit; next raise it up, endlong, in stetches, like large potato furrows, in order to expose the greatest possible surface to the air; split the stetches as often as you see need (a team will do three acres a day); keep the harrows off it until about August; when, if a shower of rain fall, the clods will begin to moulder and burst li e lime clods; then harrow it, and gather off such weeds as are left; lay on the manure; give it another good ploughing (two stirrings, stetching, and twice splitting, are about equal to three stirrings of the ordinary plan of working bare fallows); let it now lie to rest as long as possible before the seed-furrow, particularly if the land work loose and friable. It is sometimes surprising, in land infested with couch grass, to see how little is left after the stetches have been once or twice split. I have seen a piece of land, containing a quantity of arnot, or bulbous quicken, cleansed by repeatedly stetching it, without the use of the harrow. Where one plant or root had sap still left to grow, it pushed up a blade during the time the land was laid at rest before the seed furrow—these were picked out with a gripe and carried off. And here I would observe, that it is better to act as handmaid to nature than to coerce her; and I am of opinion that land opened out in the manner described, to the full influence of the sun and atmospheric air, until it begins to moulder and fall spontaneously, will make a cleaner fallow, and be in a better state of preparation for the growth of crops, both corn and clover, than if it were broken down early in the spring by mechanical force, by the application of all the implements ever invented by the ingenuity of man. To guard against any misconception of my meaning, I would observe, that if the description of land last treated upon could by thorough draining be made to produce turnips and to bear sheep treading, then a most valuable change might be made in the rotation of crops. The four-course shift at present in use might be altered, and extended to an eight-course shift, or, in other words, five and three—the advantages of which would be incalculable. But this, I fear, cannot be general in the district alluded to. Those parts which would produce turnips and bear sheep-treading lie but in patches; and though I would say, extend the growth of turnips as far as you can judiciously, it will be found that bare fallow must remain the rule, and green crops the exception. And again, if it can be made to produce a moderate crop of turnips, still, if it is too retentive to bear the sheep-treading, half the value of them is lost, as there is so much less inducement to use artificial manure, the discovery of which is one of the greatest boons which has fallen to the lot of agriculturists in modern times.

Mr. Matthews, in conclusion, gave as an appendix the scheme of husbandry above referred to viz.:—1. Bare fallow. 2. Wheat. 3. Clover. 4. Grass. 5. Oats. 6. Turnips. 7. Barley. 8. Peas.

He also appended a scheme of husbandry for clay lands, as follows:—One-fourth of arable land to be put to grass, to rest as long as may be expedient. Of the remaining three-fourths; one-third, fallow, wheat, oats; another, fallow, wheat, beans; and the third, fallow, wheat, clover. If there were three fields in each course, one of the three, when in turn for clover, might be rested, and one of those in new grass ploughed for oats. By this plan the land would be once in three years in wheat, once in three in fallow, and once in nine years in oats, beans, and clover; and no one field need be more than nine years without being rested. When the beans were intended to follow wheat, the fallow ought to be limed for wheat, and manure put upon the stubble for beans.

When Mr. Matthews had resumed his seat, his paper, which was well-received, became the text of a discussion embracing (as one of the members remarked) the whole round of agricultural industry.

The PRESIDENT expressed his entire concurrence with Mr. Matthews. The views unfolded in the paper were those which he held, as contradistinguished from those who would substitute green crops for bare fallow; and he had found the occupiers of strong clay lands—men of experience and position—with whom he had conversed on the subject—he had found them to be of the same way of thinking as Mr. Matthews. While growing a few turnips, they had no wish that their farms should be converted into turnip-farms. The character of the land might be altered to some extent, but you could not give it that loamy quality, that easiness of working, which marked the true turnip-

soil. Only the other day, he was in conversation with one of his tenants—the occupier of 900 acres, mostly strong land—who had been draining largely. He asked him how many acres of turnips he had this year? and he answered, "Thirty." He (Sir M.) inquired if he thought that was enough, in proportion to the size of his farm. "Yes," he said, "he thought it was: if he grew more turnips he would be taking away too much of his land which was better fitted for wheat." Now this land, which lay by the sea-coast, was much of it fairly convertible to the purposes of turnip-husbandry; but the tenant thought, in common with others similarly situated, that the soil was more naturally adapted to the growth of wheat.

Mr. RAMSAY said, that land such as Mr. Matthews had described, of no decided character, if the subsoil were broken up, and it was sufficiently worked, would be altered in character altogether, and become far from an inferior turnip-soil; and if turnips could be got from land not very favourable to the growth of wheat, one great point for which English agriculturists were struggling would be gained. The present was not a question of converting good wheat soils into turnip soils, but of the best system of cultivating such weak soils as those of the county of Durham. He had been an advocate of bare fallowing, but he had not now one-fourth of the lond in fallow that he used to have, and every year the quantity grew less; yet his land had not deteriorated, but the contrary. Mr. Ramsay entered into details to show the profits of stock on a farm from which bare fallows were discarded. The whole country, he admitted, could not farm so; the capital, the intelligence, the skill, could not everywhere be found; but they must struggle for an approximation to such a state of things. Farmers might, no doubt of it, apply themselves to turnip-husbandry unwisely; there were many bad farmers; but that was no reason why turnips should not be cultivated judiciously.

Mr. W. ANDERSON and Mr. GEORGE BATES coincided in opinion with Mr. Ramsay; Mr. B. expressing his conviction that there was no way so certain as turnip-husbandry of permanently enhancing the value of the land.

Mr. ROBSON, of Sunniside, was an advocate for extending the cultivation of green crops. It could not be done with profit on all lands, nor in all circumstances; but many strong lands would produce turnips to the great advantage of the tenant. There were seasons, he knew, in which it could not be done; turnip-husbandry required judgment, and skill, and capital; but if the effort were not made to grow more and more food, the country would go back rather than forward.

Mr. LAYCOCK remarked that the argument for a bare fallow was this: That the land was stirred and the air let in. Now he had invented an implement by which this object could be effected, and turnips grown as well. (Mr. Laycock described the implement.)

Mr. GLOVER said he had recently been in Scotland, and nowhere in the Lothians had he seen a finer crop of turnips than he had since witnessed on Mr. Robson's strong land.

Mr. T. L. COLBECK agreed with Mr. Matthews. Mr. Bates lived in a land of Goshen, where it would be preposterous to see a bare fallow. Mr. Ramsay said the farmers should grow turnips judiciously; and Mr. Matthews had simply contended that it was not judicious to grow turnips on certain soils. They were both, therefore, of one opinion.

Mr. PEACOCK, of Wallsend, and Mr. H. TAYLOR, of Cramlington, having spoken (the latter in favour of green-cropping),

Mr. MATTHEWS said, when the gentlemen who had opposed him had read his paper, they would wonder that they had been combating. They would find that he enforced the cultivation of turnips to the utmost verge of prudence and possibility, and was only opposed to injudicious attempts at turnip-husbandry.

Mr. LAYCOCK: But there are wide differences of opinion as to what is judicious.

On the motion of Mr. Anderson, seconded by Mr. Cookson, a vote of thanks was unanimously passed to Mr. Matthews. The feeling of the majority was evidently in favour of the views of Mr. Ramsay and Mr. Laycock, rather than of Mr. Matthews and the president.

IRRIGATING LAND IN NORWAY.—Hay being the principal support of live-stock, both it and corn, as well as potatoes, liable, from the shallow soil and powerful reflection of sunshine from the rocks, to be burnt and withered up, the greatest exertions are made to bring water from the head of each glen, along such a level as will give the command of it to each farmer at the head of his fields. This is done by leading it in wooden troughs (the half of a tree roughly scooped) from the slightest stream among the hills, through woods, across ravines, along the rocky and often perpendicular sides of the glens, and from this main trough, giving a lateral one to each farmer in passing the head of his farm. He distributes this supply by moveable troughs among his fields, and in summer waters each successively with scoops like those used by bleachers in watering cloth, laying his troughs between every two ridges. One could not believe, without seeing it, how very large an extent of land is traversed expeditiously by these artificial showers. The extent of the main trough is very great. In one glen I walked ten miles, and found it troughed on both sides, on one the chain is continued down the main valley for forty miles.—Laing's Residence in Norway.

SMALL-POX IN SHEEP.

OF THE CLAVELISATION (INOCULATION FOR SMALL-POX) OF FLOCKS OF SHEEP VIEWED AS A MEASURE OF SANITARY POLICE.

BY O. DELAFOND.

The advantages resulting from inoculation in the case of isolated enzootic or epizootic pox are numerous and indisputable. It will be easy to point them out:—

First, the inoculation of flocks already attacked with the pox, whether it be in an enzootic or epizootic form, and consequently threatened with natural infection, is a measure the general advantages of which admit of no dispute. I shall, however, once more agitate the question by a reference to the public accounts made up to the present time of the mortality of small-pox.

Huard, Valois, Langlois, Guillaume, Buignot, D'Arboval, Gragnier, Girard, &c. &c., have in France made numerous inoculations on animals that have come out of flocks among whom evident symptoms of primary and secondary stages of pox have been manifest, and consequently that have been on the verge of natural infection.

1st. They have inoculated rams, ewes in lamb or giving suck, lambs from three days to ten months old, fat sheep and lean sheep, of the common French breed and of Spanish breed, both pure and impure.

2ndly. French breeds from the south, north, east, and west of France.

3rdly. Sheep bred and brought up in places where the disease annually prevails, but not destructively, as well as from situations where its prevalence is but accidental, though destructive when it does come. To sum up these inoculations, extending over a period from 1805 to the present day, consigned now to the annals of science, it appears that, of 10,416 sheep inoculated, coming from flocks suffering under isolated and enzootic pox, 321 have died, and 10,095 have been saved, bringing the loss to 3 per cent.

In the case of epizootic pox, where the disease already existed in the flock, and consequently where such sheep as recovered, though they appeared healthy, might have lurking within them the contagious germ in a state of incubation, 28,533 head were inoculated, out of which number 285 died and 28,248 recovered, bringing the per centage to about 1 in 100.

These general results, then, are most favourable to inoculation. Let us now examine the results obtained throughout France.

M. Gayot assures us he has inoculated upwards of 10,000 sheep in the departments of La Marne and La Haute Marne during the prevalence of epizootic small-pox; and that, while the mortality ran as high as twenty per cent. among the subjects of the natural pox, it amounted to no more than 2 in 300, taking the average, among the inoculated sheep. Messrs. Miquel and Thomières inoculated, between the 19th of December 1820 and the 15th of January 1822, 17,044 sheep, constituting 84 flocks, of which 42 were in part infected with the natural pox at the period of inoculation; and those gentlemen made at the time the following remark, one that I have deemed worth recording:—

"Notwithstanting that the epizootic disease is already present among the flock," say those two able veterinary practitioners, "we must not shrink from inoculating all such as maintain the aspect of health. Even though the eruption have shewn itself upon two-thirds of the flock, we may *reckon with certainty* on saving such sheep as have not yet imbibed the germ of contagion. We inoculated the flock of M. Antoine Rautier d'Adige, consisting of 300 head, of which forty already shewed the natural pox. In consequence of the remainder being inoculated, not one of them was lost.

"In another flock, consisting of 185 sheep, small-pox had seized upon two-thirds. Out of the remaining third, which were inoculated, five were lost. This mortality may appear considerable by the side of the former one. The owner of them, however, possessed no means of separating the animals in health from the sick; added to which, a hot humid wind from the south contributed not a little to aggravate the evil*."

From 1822 to 1824, M. Guillaume, veterinary surgeon at Issoudun, practised inoculation in the departments of Indre and Cher in every season of the year. Among twenty-seven flocks, constituting a total of 10,568 sheep, 1,183 sheep (rather more than a tenth of the whole number) already had got

* Miquel and Thomière's Notes on the Inoculation of Sheep-pox, pp. 6, 7, and 8.

the disease, of which number 633, or more than the half, died. Nevertheless, M. Guillaume inoculated 9443 sheep that were exposed to the contagion; and out of this number but 14 died—about 1 in 674.

To these we will add examples taken from foreigners. In Prussia, in the case, too, of epizootic sheep-pox, out of 66,716 sheep inoculated, 1674 have died, 65,042 recovered; bringing the loss to $2\frac{1}{2}$ per cent.

In Austria, in 1810, inoculation was practised upon 8000 lambs and 2000 sheep, without any loss whatever.

These researches appear to afford positive demonstration that inoculation (clavelisation), introduced into flocks already infected with the disease, in its first or second stage (*bouffée*), in situations even where the disease prevails epizootically, is an operation which, *generally*, is attended with no other than the happiest results. And that if, in any case, inoculation has, in sheep already contaminated, and under the influence of the fever of incubation, given rise to a malignant and fatal pox, such cases ought to be regarded as rare exceptions.

In respect to the inoculations of flocks in good health, but threatened with inevitable contagion from some vicinity, the loss is very small indeed.

From 1815 to 1819 were inoculated 16,000 sheep, of which 10,000 were lambs, belonging to the fine flocks of the Marquis of Brabançais; and the loss, at the most, did not exceed 1 per cent.

Farmer Dupreuil had his flocks inoculated, in consequence of their being threatened with small-pox contagion. 1700 ewes, three months gone in lamb, were inoculated; 21 died after taking cold. The loss here is but 1 per cent. under such very unfortunate circumstances.

The same year, rather later, the same farmer had 480 sucking lambs, and 550 lambs from six to seven months old, inoculated, making together a total of 1030; and the loss amounted to no more than 1 in 500, or thereabouts.

In general, in prophylactic inoculations, or in such has have been instituted at the moment of danger of contagion, we may reckon that, whatever be the situation, the season, the breed, the age, the condition of the female—in lamb or giving suck—*the loss will not, under the most unfavourable circumstances, exceed* 1 *out of* 200 *inoculated.* Now that experience has shewn the expediency of separating the inoculated sheep from those that have caught the disease naturally, in order to avoid double inoculation, a natural as well as an artificial; of airing, ventilating, in a word, purifying the habitations of the inoculated; of making use of no other virus save that which is of a benign description, and has been deprived of its acridity (*affaibli*) by several successive transmissions, and that has been taken at a time when inflammatory phenomena have for the most part left the pustule, or in other words, about the tenth or twelfth day from that of inoculation; of making no more than one puncture in the tail, and so endeavouring, as much as possible, to introduce but a feeble dose of the virus into the orgasm: with precautions such as these, now that it is ascertained by veterinarians that the sheep-pox virus retains its active properties for a period of from fifteen to eighteen months, what ought one not to hope from well-conducted inoculations?

I believe, therefore, we are at liberty, at this day, to conclude that the inoculation of flocks of sheep already suffering from small-pox, either in a sporadic, enzootic, or epizootic and fatal form, the same as inoculation of flocks in good health, but threatened with contagion, is an operation which, up to the present time, has been followed by unquestionable success; and one which, in our day, cannot be viewed in any other light than as being highly advantageous to the conservation of our flocks, seeing it reduces their losses from 15 to 20 per cent. at least, in the case of natural pox, down to 1 or at most 2 per cent.

I ought not to omit to add, that the inoculated small-pox of our day, being a disease of a more benignant character, rarely or never is productive of those incurable infirmities or those serious consecutive maladies which happen after natural and epizootic pox; and especially ought I to remark, that such inoculations as are made with benign virus are but very rarely followed by secondary eruptions, and that, consequently, the fleece of the sheep undergoes, in general, but slight alteration—an advantage which will not fail to be highly appreciable by farmers, and by those in particular possessing flocks whose wool is precious.

When natural small-pox breaks out in a flock, its ordinary duration is *from three to four months;* whereas the inoculated disease in a whole flock will not occupy more time than a single attack, or *at most one month.*

There is no reason to doubt for a single moment that inoculation is preservative during the entire life of the animal against small-pox. A computation made by D'Arboval shews *that* 7697 *inoculated sheep have been either submitted to divers counter-proofs of inoculation, and that these have been variously repeated; or have been made to cohabit with sheep suffering from the natural pox, and that in no case has any disease been contracted.*

In the case of natural and malignant pox, the loss of a fourth or a third of the animals of the flock, although grievous enough for the farmer, is still not his entire loss. The numerous miscar-

riages happening to ewes in lamb, the inevitable transmission of the disease to the lambs just dropped, and which generally die in great numbers, the stinted growth it produces and the impediments it throws in the way of fattening; lastly, the lengthened sequestration it requires in the sheep-fold during winter, and the cantonment assigned the sheep by the authorities in the summer time, make, altogether, so many circumstances occasioning loss both of money and time, as well as necessarily incurring greater or less expenditure.

The selection of proper virus, inoculation properly conducted, followed by well-ordered and punctually executed management, will, in an immense majority of cases, not to say in every case, prevent the alarming inconveniences attendant on natural pox.

Viewed as a measure of sanitary police, inoculation presents results of no less importance.

Put into practice on one or several isolated flocks in which the pox has already declared itself, and whose duration cannot be accounted shorter than from one to three months, inoculation cuts this short to one month, besides mitigating to a considerable degree the severity and amount of the morbid matters transmitted by the benignity with which it invests them.

Now all these important advantages are set forth in a much more striking manner when the sheep-pox happens to be enzootic or epizootic among the flocks of the canton, district, or department. In such a case as this, it sets limits to the duration of the epizootic, considerably lessons the chances of propagation, and, what is well worth noting, prevents those frightful mortalities which too often are occasioned by epizootic poxes assuming the malignant form.

Lastly, introduced into flocks in health, but threatened with contagion, in a manner unavoidable, inoculation limits to one month the duration of the pox, and thus prevents the access of a disease which, on its first attack, might destroy a large number, besides increasing the propagating elements of contagion.

Independently of all these incontestable advantages, inoculation, by transmitting the pox to the whole of the flocks of the same parish or locality, will render useless any measures of sanitary police, such as visiting, telling off, marking, separating, cantoning—measures which I have represented as inconvenient, often insufficient to assist contagion, and whose administration will now prove unnecessary, since in the same canton or valley all the sheep will have had the disease. And now the flocks may be driven into any pasturages, wherever they may be situate, how distant soever from the farm; following the roads they are in the habit of taking, avoiding only such high roads or public thoroughfares as are open to strange flocks; they may likewise frequent the same watering-places, common, &c., without inconvenience. The epizootic will not last longer than the limits in a manner assigned it by man, and the sheep which have been inoculated will for ever be preserved against small-pox. And after a month or two, the farmer may dispose of his sheep in the public market without any apprehensions on the score of contagion.

Thus, conservation of flocks with their fleeces, limited duration to the disease, its mitigation, inutility of sanitary measures and regulations, economy and peace of mind to the farmers, vendibility of the animals inoculated, after a month or two from their having the disease, are the precious fruits of the practice of inoculation, whether it be on flocks afflicted with the pox, or on such as are yet free from it, though from the proximity of contagion to them hardly likely to escape it. And so inoculation has met with advocates in veterinarians of high repute; among whom I may name Huzard, D'Arboval, Gragnier, Dupuy, Girard, and many farmers—Brabançais, Dupreuil, Berthier, Fessand, &c., &c.; the Society of the Pas de-Calais in 1815; and the Minister of the Interior of the same year. Lastly, inoculation has been imperatively ordered to be put to trial by several prefectoral authorities, as I shall shew hereafter.

Clavelisation (inoculation) of flocks of sheep, then, is a measure generally received as beneficial and advantageous, be it viewed in the light of private or public interest, with regard to isolated enzootic or epizootic pox, to sheep belonging to flocks already infected, or to such as are inevitably threatened with contagion.

Nevertheless, objections have been raised against inoculation. At another time we shall examine these, and endeavour to combat them.—From the Recueil de Médecine Vétérinaire for January 1848.

ON QUEEN'S PLATES, AND THE BREEDING OF HORSES AS FARMING STOCK.

BY FREDERICK CLIFFORD CHERRY, PRINCIPAL VETERINARY SURGEON.

Sir Harry Smith, on the occasion of his health being drunk at the dinner of the Royal Agricultural Society, at its annual meeting in 1847, at Northampton, thanked the company for the kind manner in which they had received the mention of his name; and, in the course of his remarks, advised that some attention should be bestowed upon "keeping up the breed of hunters, as a matter of great importance in a military point of view. A body of English soldiers mounted on hunters was a terror which an enemy could not easily resist. That valuable breed of horses was so much deteriorated, that if 500 were wanted for the use of the cavalry at the present moment, he believed they could not be obtained."

Now, attention to these matters having been a part of my duties for forty years, as a veterinary surgeon in the army—latterly principal; and, moreover, horses and everything pertaining to them being among my pleasurable pursuits, I had arrived at opinions similar to those expressed by Sir Harry. This being the case, and my fondness for every thing of an agricultural nature, imbibed and practised through every branch in early youth, remaining undiminished, I was led to address the Royal Agricultural Society of England on this subject, at the time the letter hereunto appended bears date.

That communication was referred to the Journal Committee, where it fell lifeless to the ground. The importance of the subject to the British farmer will not, I think, be questioned; since it embraces the production of a class of animals more generally useful for a greater number of purposes, and therefore more remunerative to the breeder, than any other; and the failure of this attempt to bring the subject into notice, I must confess, disappointed me, but has not deterred me from pursuing it. I therefore print and circulate the document annexed, in order to excite attention to the matters treated of, which resolve themselves into this: whether £2,000 annually, given originally for promoting improvement in the breed of English horses, on which it has long ceased to have any influence, should be continued merely for the contingent advantage of some twenty persons being each placed within the possible reach of obtaining a prize of £100; or whether the like sum should be so disposed of as to lessen the cost of breeding that class of horses the most generally useful, and thereby lead to an increased supply?

The £2,000 given annually, in Queen's Plates, no doubt originally contributed much to the improvement of our breed of horses; but the circumstances then existing have entirely changed; and it appears pretty clear that it may now be applied in a much more beneficial manner.

The skill shown by the founders of the breed of horses which have exclusively obtained the name of "thorough-bred," produced stoutness as well as speed; and so long as races were contested in heats of four miles, the horse carrying twelve stones, both these qualities were indispensable, and the character of "thorough-bred" horses was raised to the highest pitch of eminence.

But a change has taken place, and it is easily traceable to later supporters of the turf, who established the custom of running ridiculously short distances with very light weights. Indeed, the facilities for "making a book" appears, with few exceptions, to have become the paramount object.

It takes a long time for well-earned reputation to wear out; this is particularly shown with regard to thorough-bred race-horses; and we are constantly hearing owners of weedy, feeble animals boasting of their being *thorough-bred*, though as unlike their progenitors as animals of the same species well can be. Besides, fashion has extended the term to every horse with hairless legs.

This exclusive application of the term thorough-bred to horses that have figured, or whose relations are supposed to have figured, in a race, is manifestly an error. Any horse is thorough-bred whose leading peculiarities or qualifications have descended uninterruptedly through sire and dam for a certain number of generations. Thus we may have thorough-bred hunters and cart-horses, as well as thorough-bred race-horses.

Formerly, the only means for travelling from place to place was the back of a horse; and then, as might be expected, a race of horses with adequate power to carry heavy men was studiously kept up. But improvements in roads, and in the construction of wheel-carriages, have long afforded a different and more easy mode of conveyance. Besides, we now have railways and locomotive steam powers, whisking the traveller along at a marvellous rate, annihilating space, to some station

or terminus, whence he takes refuge in the mob of a "bus," or in a "cab," drawn by miserable horses, equal only to the short distances they have to drag the load.

The difficulty to obtain horses of suitable power as remounts for the cavalry is yearly increasing; and the time has arrived for seeking some means to remedy this evil, and at the same time to place within the reach of Englishmen of every degree an animal of sufficient strength and activity to bestride with safety and pleasure.

To rescue the breed of English horses from the deterioration it is rapidly undergoing is surely worth an effort, which, if made in the right direction, may enable this country to breed for half Europe, retaining to ourselves an ample stock beyond the power of the foreigner to exhaust; if, indeed, the policy of the British Government should allow such a drain on our native resources to continue. FREDERICK CLIFFORD CHERRY.

Clapham Common, Nov., 1847.

Letter addressed to the Royal Agricultural Society, and referred by the Council to its Journal Committee.

Clapham Common, June, 1843.

I wish to draw the attention of the Council of the Royal Agricultural Society to the nature of the premiums proposed to be offered for horses, for the meeting at Southampton in 1844. These premiums are limited to those of the cart-breed, with the exception of one to the owner of the best thorough-bred horse that shall cover the greatest number of mares at a charge not exceeding three guineas.

I understand the term *cart*-horse to mean the powerful animal, generally black, used for the slow draught of heavy loads: a description of horse which, under many circumstances, perhaps yields the largest profit to the breeder, from the early age at which they become useful and marketable, as well as the comparatively good prices they usually sell for.

In this breed we stand unrivalled; to keep up and improve it is a most important object: but the interests of the farmer, and of the country generally, are not limited to this description alone.

The comparative numbers of cart and of half-bred horses used by farmers, and in business generally, it might be difficult to ascertain; that the latter, in almost endless varieties, are much the more numerous, cannot be denied.

Attention to the stallion alone, however judicious the selections may be, is only a half measure; for, without equal attention to the mare, a mongrel produce is too often the result. Indeed, this seems to be admitted by the cart-horse premiums of our society embracing mares, two-year-olds, and foals.

The real coach-horse stands next to, perhaps ranks with, the cart-horse, in regard to profit to a breeder; for, as to cross-bred horses, the great bulk of them yield but little.

The eagerness with which hunters and roadsters equal to carry anything like heavy weight are sought for, and the prices willingly given, are proof of their scarcity. How general is the complaint, from men of even moderate weight, of the difficulty they find in getting mounted.

The great bulk of horses in this country, no doubt, belong to the class which I have described, as of little value, and the proportion of these is admitted on all hands to be increasing. To effect improvement in this description of horses appears to me an object intimately connected with the interests of the English farmer.

The powerful fast horses, under the name of "machiners," formerly worked in the now-almost-obsolete stage-coaches, have been replaced by an equal, if not greater number of animals, mostly a mean, mongrel, over-worked, under-fed set, used in omnibuses, flys, cabs, and so forth, unhesitatingly stumped up, because from the number of this description they can be replaced with little money.

The thorough-bred race-horse, when required to carry twelve stone, and run four-mile-heats, was a powerful, splendid animal; but the modern fashion of short distances, carrying very light weight, has brought him down comparatively to a feeble weed, so that being thorough-bred has ceased to be a test of excellence.

The pleasure and profit of large classes of men in this country are mixed up with the character and goodness of our horses; and, considering the casualties they are inherently liable to, the never-ending expense they require, there is perhaps no article of produce brought to market with so little profit to the producer as a horse; but, on the other hand, there is on the part of our countrymen a natural fondness for the animal, which outweighs the consideration of mere pounds, shillings, and pence. Let us endeavour to contribute to the keeping up of this feeling, by judicious attention to the breeding a race of horses the best adapted for the greatest number of purposes horses are applied to, and these most undoubtedly require neither the cart-horse nor the weedy racer for half a mile with six stone on its back, but an animal with greater speed and activity than the one, and greater strength and firmness than the other.

That crosses sometimes engender good progeny, is no doubt the case; but can any reliance be placed on continually crossing for a permanent stock? My experience and observation lead me to say, No; and that a permanently good breed of

animal is only to be secured by constantly selecting both male and female, each possessing in the greatest degree the particular merits and qualifications deemed the most desirable ; and the further these especial qualifications go back on both sides, the more likely are they to be inherited by the progeny —a fact fully admitted by the care taken in compiling our Stud Book and our Herd Book.

The term cross-breed should be discarded from our nomenclature of horses ; that of half-bred is not the most appropriate, but answers the purpose very well until a better can be adopted. In my boyhood, the description of horses—namely, the half-bred, which appears to me the most extensively useful, and among the most profitable to the farmer, both as useable and saleable stock—was much more numerous.

The breeding of horses, or even the cultivation of an ordinary cross, is not like the purchase and sale of a tangible commodity ; the foundation must be laid, and the superstructure allowed the growth of several years, requiring through all that time unceasing care and assiduity before the probable value of a colt or filly can be even estimated.

Of thorough-bred stock, how few turn out prizes by becoming winners ! and how numerous are the weedy blanks, that may be bought at almost any low price a purchaser may offer !

I hope, however, that nothing I have said will be construed into an intention of disparaging horse-racing, or thorough-bred horses as they ought to be ; nothing is further from my intention, for I am alive to all the advantages which have been derived, and continue to be derived, from this noble national sport : still I cannot help being of opinion that these would be materially increased by lengthening the distances generally run and imposing higher weights.

Strength, especially in the limbs, perfect flexion of joints, lightness and firmness of step, good temper, activity, adequate speed in all the natural paces, roundness of rib in the region of the heart, lightness of mouth, willingness to work feely, and general symmetry of form, are among the qualifications most generally sought for ; and for horses possessing these, I wish to see premiums as a distinct class, at least equal to those for cart-horses, offered by the Royal Agricultural Society of England.

Another important point, well deserving serious consideration, is that of the means for mounting the cavalry of the British army ; and when I advert to the military rank, experience, and gallantry, to be found in so many of our members, I hope this branch of the subject will not be treated as foreign to the objects of our association, especially as the animal required for a trooper ought so nearly to approach the best standard of general usefulness for saddle and harness.

Instances may be adduced as occurring during the late war, wherein the success of our cavalry operations were less successful than usual, from the smallness and lightness of the horses, gallantry and discipline in both officers and men being always conspicuous.

It is very common to hear the remark, that the best remounts for our cavalry are obtained in Ireland. Admitting this to be true—and I believe it to be so—the fact is not reputable to the horse-breeders of this country.

When the Queen's guineas were first given, and for many years afterwards, the prize was an object worth contending for ; but now only second or third-rate horses are entered for Queen's plates. The running of heats, and the high weights, engaged the best horses of those times, and no doubt gave a stimulus to breeding for strength as well as speed, and did much good ; but, under all the altered circumstances of present times, neither the breed of our horses, nor the interest of the racing community, would sustain any injury by these annual prizes being altogether discontinued.

But although this royal bounty might with propriety cease to flow in its present channels, still it should not be diverted from its original object, viz., the improving the breed of English horses.

To effect useful improvement, not only is patronage, rightly directed, requisite, but so also is some fund whereon to rest ; but in these times I fear it is hopeless to ask for government assistance, and therefore it is that I am induced to suggest the discontinuance of a grant in one form, in order that it may assume another, which I humbly conceive would turn out to be much more generally useful and advantageous to the breeders of horses and their users.

With this view, therefore, I would propose that the same amount of expenditure, viz., that now bestowed on the annual Queen's plates (about twenty in number for England) should be applied to the purchase and keep of a certain number of the most compact, stout, good-actioned, well-formed stallions the country could furnish : if thorough-bred, so much the better, but this should not be an indispensable qualification. That these stallions, during March and the four following months in every year, should be sent to, and remain in, those parts of England where the greatest number of horses are usually bred. That each horse should be given in charge to an efficient man, of well-ascertained ability and integrity. That these stallions should be allowed to cover none but the very best sort of mares, and these the property of farmers. That this should be done gratuitously, except as to a

small fee for the man. That such man should be sufficiently well paid to make it his interest to act faithfully and honestly. That both horses and men should be selected by the Inspecting General of Cavalry, and be entirely under that officer's control. That during the seven months of the year other than those named, all the horses should be assembled at any one place which might be fixed upon as most fit for the purpose. That, during this period, the number of men should be reduced to one for every two horses, giving to the supernumerary men whose merit would entitle them to future employment a materially diminished rate of weekly pay during the winter months.

Minor details would necessarily arise in the course of carrying out a measure of this nature, but no difficulties that may not easily be surmounted.

Although these propositions assume somewhat of a military character, it must be borne in mind that they mainly tend to the advantage of the English farmer as a breeder of horses, for the get of these stallions, provided and supported by the Crown, would be the property of the owner of the mare. Government would have no claim on such produce beyond that of an ordinary purchaser; the breeder selling at a market price, or not selling at all, as he might think proper. Still, the government has an interest in this subject, inasmuch as an improved description of horse would be the result, with greater numbers to select from for the public service.

Figures may easily be made to produce any result a calculator sets his mind upon; I therefore abstain from entering on estimates of any kind. The first question, is the correctness of my views and the feasibility of the measures I propose. The next is, as to the countenance and support they may deserve, or are likely to receive. These points being ascertained, the working details may be entered upon; but it would be a waste of time to go into those before the primary question of principle is favourably entertained.

The opinions of our society, if favourable to the measure proposed, will go far towards removing any objections that may be started on the part of those who look alone to the limited operations of the turf, as regards a Queen's Plate; and probably induce the authority having control over the money thus bestowed to appropriate it to more generally useful purposes. F. C. CHERRY.

Subsequently to putting together the foregoing letter, I framed the following approximation to an estimate for making an annual sum of £2,000, being about the amount given yearly in Queen's Plates for England alone, available to the providing and keeping twelve horses to cover mares gratis; thereby facilitating the breeding of an increased number of that class of horses the most generally useful for the greatest number of purposes, and therefore calculated to leave the most profit to a breeder.

APPROXIMATE ESTIMATE.

	£	s.	d.
Expense of each horse, per annum:—			
153 days' keep, at 4s.	30	12	0
212 do. do. at 2s. 6d.....	26	10	0
153 do. man, at 4s. 6d.	34	8	6
212 do. one man in employ at 3s., and one man retained for employ at 1s. £42 8 0			
This being for 2 horses, take the half, or	21	4	0
	112	14	6
Sundries	2	5	6
Annual expense of one horse..	£115	0	0

1st year, the account would stand thus :—			
Cost of 4 horses	£1200		
Expenses on ditto	460		
Annual Expenditure..	1660	Surplus	£340
2nd year :—			
Cost of 2 horses	600		
Expenses on 6 ditto.....	690		
Annual Expenditure..	1290	ditto	710
3rd year :—			
Cost of 2 horses	600		
Expenses on 8 ditto.....	920		
Annual Expenditure..	1520	ditto	480
4th year :—			
Cost of 2 horses	600		
Expenses on 10 ditto	1150		
Annual Expenditure..	1750	ditto	250
5th year :—			
Cost of 2 horses	600		
Expenses on 12 ditto	1380		
Annual Expenditure..	£1980	ditto	20
Total of Surplus			£1800

The surplus of £1800 would be applicable to the replacement of casualties during the first five years. when the expenditure might be expected to assume somewhat of a settled character, and admit of two horses, at £300 each, being purchased annually.

COATES'S HERD BOOK.

By H. STRAFFORD.

London: Joseph Rogerson, Norfolk-street, Strand.

It is almost a work of supererogation to call the attention of the breeder to the fact of the immense advantages to be obtained by the possession of Coates's Herd Book. Here the reader can trace the blood of any ani-

mal, and select from such herds as he may deem best adapted to improve the breed of his stock. The pedigree of each animal is correctly and faithfully compiled by a gentleman well known amongst the breeders of short-horns (Mr. Strafford), and those who would possess full information on this subject must have such a book of reference as that which Mr. Strafford has now (by this his eighth volume) given to the agricultural public. The volume contains the names and pedigrees of 1,052 short-horned bulls, and over 2,800 cows and heifers; and they are so admirably indexed that the reader has no difficulty in referring to any animal immediately. There is also an alphabetical list of breeders, with an excellent simple reference by figures to the several pages in which the names are to be found. Thus has the Editor, in the most compact and useful form, preserved the pedigrees of the best cattle of the short-horned breed; and who will deny that the properties of the family from which the animals are descended, are not of as much importance as the form of the animals themselves? The extraordinary prices always realized for the best bred bulls and cows, show that they who give fitting attention to the rearing of their stock are not without their reward.

ON THE OVER-FED STATE OF ANIMALS EXHIBITED AT THE SHOW OF THE ROYAL AGRICULTURAL SOCIETY.

TO THE COUNCIL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

My Lords and Gentlemen,—Seeing, by the *Mark Lane Express*, that there are great defalcations, by members not paying up their subscriptions, sorry I am to find that it will be requisite to sell out some of the funded property to meet the payments. I attribute this to the animals being so over-fed as to destroy their usefulness. Many have discontinued to show entirely through this, and some of the finest stock in Yorkshire were not exhibited entirely on this account; many of the bulls were far too fat to be useful; and as to the pig stock, those which could not stand and walk I passed by, wishing to carry out the ends for which the Royal Society was instituted, namely, to promote the breeding and improvement of stock: this is assuredly bad to remedy. Sir Charles Tempest told me he had discontinued showing, entirely on account of the prizes being given to animals being so over-fed as to destroy their breeding propensities; Mr. Webb also discontinued showing rams which were older than shearlings for the same reason. I hope the council will endeavour to adopt some plan that this abuse may be remedied.

When the honourable Board of Agriculture was in existence, £50 was given to each county in England for the best cultivated farm, when I had the honour to receive that premium for the county of Westmoreland; it was a great stimulus in that day to agricultural improvements. The Kendal Agricultural Society continues to give premiums for cultivation; namely, best cultivated farm, best turnips, according to the size and capabilities of the farm, laying down land to permanent grass, &c., &c. This has had the effect of improving the cultivation of farms in this district to an extraordinary extent, giving a stimulant to exertion by offering premiums for cultivation; and rest assured the product of the soil will be considerably increased. We have a wonderfully increasing population, and every legal means ought to be adopted to rouse the energies of the farmer to raise an increase of food. Their firm conviction is, that were the legislature to vote an annual sum for each county, according to its size and capabilities, that, ere long, one-third more produce might be raised. Local judges and inspectors might be found; men of integrity and worth, and competent to the task, may be found in every district, who would perform the duties conscientiously at a small cost. Fourteen to twenty-one years' leases would be an inducement for capitalists to lay out their money in improvements; no sensible man, with a fair portion of capital, will venture it on a seven or nine years' holding. Let the farmer have such length of term as to ensure a return for his outlay, and depend upon it the face of the country would rapidly change; the labourers' and artizans' employments would be greatly increased, and be the means of lessening the poor rates, and give comfort to that class of beings who are the most deserving—the agricultural labourers.

His Grace the Duke of Richmond is an ornament to his country; he has the love and respect of the farmers of England; and by his co-operation with other noblemen and landowners, a great deal may be effected. The farmers of England will never forget the exertions made by the gallant duke and the late ever-to-be-lamented Earl Spencer, aided by Mr. Shaw and other influential agriculturists, in establishing the Royal Agricultural Society of England.

I have the honour to be, my Lord Duke,
My Lords and Gentlemen,
Your most devoted and most obdt. servant,
W. Ellison.

Sizergh Castle, near Kendal, August 22.

P.S.—The great object I have in view is to encourage an improved cultivation of the soil and breed of cattle, &c., so as to make us less dependent upon foreign nations for our supply: every quarter of grain from a foreign power displaces a proportion of English labour.

PLEURO-PNEUMONIA AMONGST CATTLE.—It unfortunately happens at the present time that pleuro pneumonia, or what is more generally known by the name of the "lungs illness," prevails to a considerable extent in this part of the country, and in numerous instances proves fatal to horned cattle; and as it also appears that up to this time there are many cattle keepers who have not found out any successful mode of treatment for this disease, I would therefore ask the favour of a little space in your columns for the following remedy, which was communicated to me by Mr. Clarkson, of East Cowton, viz.:—"Give to the beast attacked four ounces of spirits of nitre, neat, and repeat the dose in eight hours; then twelve hours after, give

one gill of spirits of turpentine, and one pint of linseed oil. Keep the animal well covered up with rugs to promote warmth. Mr. Clarkson has found this an unfailing remedy, and since adopting it in several cases, he has invariably effected a speedy cure. It is, however, important that the animals be attended to in the early stage of the disease.—Thomas Dixon, Darlington, Aug. 16.—[Several remedies for this disease have been announced from time to time, but we have never yet heard of one which was to be relied upon. We have made frequent inquiries in the districts where the disease has long prevailed, without success.—Ed. F. M.]

METEOROLOGICAL DIARY—1848.

	Barometer.		Thermometer.			Wind and State.		Atmosphere.		
Day.	8 a. m.	10p.m.	Min.	Max.	10p.m	Direction.	Force.	8 a. m.	2 p. m.	10 p. m.
	in. cts.	in. cts.								
July 22	29.90	29.91	54	69	62	W. S. W.	lively	fine	sun	fine
23	29.92	29.94	59	72	59	W. S. W.	lively	fine	sun	cloudy
24	29.90	29.99	55	68	55	S. West	lively	cloudy	sun	fine
25	29.89	29.85	54	64	57	S. West	lively	cloudy	cloudy	cloudy
26	29.85	29.79	56	65	61	S. West	brisk	cloudy	cloudy	cloudy
27	29.92	30.00	54	66	59	S. West	lively	cloudy	sun	fine
28	30.09	30.15	55	70	62	West, W. by S.	gentle	cloudy	sun	cloudy
29	30.19	30.16	57	72	64	W. by N., S.	gentle	cloudy	sun	fine
30	30.05	29.80	56	72	61	S. West	gentle	cloudy	cloudy	cloudy
31	29.60	29.60	59	68	60	S. West	gentle	cloudy	sun	cloudy
Aug. 1	29.45	29.75	55	63	57	S.W.-West	strong	cloudy	cloudy	fine
2	29.94	30.00	53	67	56	W., S. W.	lively	cloudy	fine	fine
3	29.94	29.80	51	60	56	S. West	gentle	cloudy	cloudy	cloudy
4	29.74	29.74	50	66	56	W., S. W.	lively	fine	sun	cloudy
5	29.66	29.55	54	65	58	S. West	forcible	cloudy	cloudy	cloudy
6	29.71	29.84	52	66	55	W., S. W.	variable	fine	sun	fine
7	30.01	30.02	50	68	56	W. S. W.	airy	fine	fine	fine
8	30.00	29.86	49	58	56	every way.	gentle	cloudy	cloudy	cloudy
9	29.88	29.90	49	64	54	Westerly	gentle	fine	fine	fine
10	30.00	30.10	48	68	56	W. by S., var.	airy	fine	sun	fine
11	30.10	30.07	50	62	56	W. by S., var.	gentle	cloudy	cloudy	cloudy
12	30.00	30.07	55	66	60	N. by W., W.	calm	haze	cloudy	fine
13	30.06	30.03	57	61	57	West, E. by S.	gentle	cloudy	cloudy	cloudy
14	29.96	29.84	53	57	56	N. East	lively	cloudy	cloudy	cloudy
15	29.90	29.94	54	64	58	variable	gentle	cloudy	cloudy	fine
16	29.92	29.86	56	67	60	E. by North	gentle	cloudy	cloudy	fine
17	29.96	30.00	55	64	60	W. S. W.	lively	fog	fine	fine
18	30.12	30.01	56	70	62	var., S. by E.	airy	cloudy	sun	fine
19	29.83	29.86	58	64	57	S. Westerly	lively	cloudy	cloudy	fine
20	29.94	30.01	50	65	55	Westerly	gentle	fine	sun	fine
21	29.82	29.64	52	64	55	S. West	violent	cloudy	cloudy	

ESTIMATED AVERAGES OF AUGUST.

Barometer.		Thermometer.		
High.	L	High.	Low.	Mean.
30.260	29.35	82	41	61.6

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
65.64	54.74	60.18

Weather and Phenomena.

July 22: Fine evening, with cirro-stratus. 23: Fine till evening; rain. 24: Rainy all night; showers. 25: Overcast; showers. 27: One shower; finer evening. 28: Finer; stratified clouds at sunset. 29: Nice harvest day, though not sunny. 30: Overcast; rain early; fine day. 31: Rain over night; showers and gleams.

Lunations.—Last quarter, 23rd day, 11 h. 28 m. forenoon. New moon, 30th day, 7 h. 25 m. morning.

August 1: Showers: heavy thunder, with hail. 2: Pretty fine; red horizon at West. 3: Profuse rain; thunder. 4: fine forenoon; shower; evening fine. 5: Strong wind; frequent light showers. 6: Fine day; two showers. 7: Fine, and calmer throughout. 8: Rainy for hours. 9: One shower; generally fine and sunny. 10: Beautiful till 4, then heavy clouds and thunder. 11: Cloudy; rain after 3 p.m. 12: After haze, a clearing and some sun. 13: Close; wet evening. 14: Dripping wet all day. 15; Oppressive morning; gloomy, and two cross currents. 16: Wave-like, black

clouds; oppressive; clear night. 17: Much finer. 18: Fine harvest day. 19: Again rainy; at sunset a remarkable horizon at N. by W. 20: A very beautiful airy day. 21: Profuse showers and high wind.

LUNATIONS.—First quarter, 7th, 2 h. 57 m. morning. Full, 14th, 8 h. 16 m. afternoon. Last quarter, 21st, 4 h. 8 m. afternoon.

REMARKS REFERRING TO AGRICULTURE.

To this day (21st of Aug.) we have had only four of sunny weather during August. Harvest began here on the 1st, and has since been retarded. Much wheat is, however, carried; more is ready, and would, to a great extent, have been harvested this day had it been fine. Some has sprouted. A wet summer will occur now and then, as we proved in 1797, 1816, and 1843: but it is not of frequent occurrence, and then, as now, much of compensation is made by the immensity of the root crops. In the North and East we are told that the season is comparatively dry. JOHN TOWERS.

Croydon, Aug, 21.

CALENDAR OF HORTICULTURE.—SEPTEMBER.

RETROSPECT.—The condition of the potato forms one of the questions of the day. Up to the period of my last report, daily observations of the vast crop in the ground induced the conclusion that nothing was amiss; add to which, the healthy appearance of the sale stock in the market, at low terms, tended to prove that the promise was most encouraging. Disease, however, had been insidiously approaching; for, in the last week of July, black spots began to appear, accompanied with reddish-brown blotches on the stems and leaf-stalks, which gradually rendered them quite brittle. Accounts have since become conflicting: one party asserts that the crop is lost, particularly in Ireland; another questions and even denies the correctness of the assertion. My own observation constrains me to say that, so far as the leaves and stems are concerned, the attack has been sudden and rapid in its progress, but of the underground crop I have seen nothing that assures an extensive decay. There are two opinions afloat, one of which coincides with that formed by me, and impressed during the last two seasons, namely, that owing to the general attack of 1845-6, the stock must have become infected, and therefore, notwithstanding the tubers planted might appear sound, they could not have been entirely free from taint, and hence it was but too probable that disease would be propagated and extended. Results have sanctioned this opinion, and it is a sorrowful fact that, as from the paucity of the stock planted in 1847, and the extreme drought of that year, the malady appeared to be on the decline, so, just in proportion to the immense breadths now existing, and the long continuance of electrical rains, is the extension of the seizure.

A debilitated store—the debility produced by imprudent treatment—acted upon, in all probability, by a general atmospherical epidemic in 1845, has, I fear, placed us in a very unfavourable position, from which we may not emerge until the seed store shall be entirely renewed, to be planted in new and fresh ground. Time will show.

All the old seed-producing potatoes have long vanished. Even admitting that we hear of "the shaw," yet where is the fine "early shaw" of 20 years ago? We now have a tuber so called—we have middle, early, later or autumnal, and winter keepers, all "shaws," but where is the *quality?* In point of fact, is there a potato in the market which for pure flavour and perfect mealiness can compare with those of "auld lang syne?" The hard, waxy, odd-flavoured, tubers of the day seem to announce deterioration; and *that*, I fear, must be ascribed to some unfavourable change in their parenchyma and starch granules.

OPERATIONS IN THE KITCHEN GARDEN.

September is the natural season of the mushroom (*Agaricus campestris*). Artificially it is raised in open beds duly protected; in cellars, pits, or, above all, with most certain success in dark houses constructed for the express object; and finally, very well in expended melon frames, according to a process described in vol. v., p. 3, of the early "Horticultural Transactions." The Rev. Mr. Williamson there says, presuming that a melon bed has been duly spawned after the abatement of the first heat of the dung, &c., in spring:—"In September or October following, when the melon bine is decaying, the bed is carefully cleaned, the glasses are put on and kept close; and when the mould becomes dry, it must be only moderately watered; advantage should also be taken of every gentle shower. The moisture coming upon the dry earth produces a moderate heat, which soon causes the mushrooms to appear in every part of the bed in such abundance as to prevent each other's growth." These beds continue long prolific; but not to enlarge now, we propose to resume the subject at the proper seasons.

Hardy winter lettuce sow soon, as the season is now fully late; and prefer a cool cucumber frame, as therein moderate warmth and a rich bottom earth will secure the plants and promote growth. In damp soils the seed should be sown on flat ridges raised, to be hooped over before frost, to receive a covering of mats or oiled canvass.

Sow cauliflowers in frames; plant out those already in seed beds, three or four inches asunder, on or after the second week; plant three or four together, to be covered with a hand-glass; or transfer to frames and pits, to be preserved during winter. It is impossible to succeed without ample protection. Cape brocoli will now be coming into regular bearing; as yet, the plants remain pretty free from the caterpillar (*Pontia brassica*) with which they were ravaged in 1847. Take up every stump so soon as the head is cut.

It will not be too late to sow in the first days of the month for another crop of the broad-leaved spinach, also radish (the round-rooted), and from time to time corn salad, mustard and cress.

Transplant cabbage, Scotch kale, borecole, and savoys. Take up potatoes, and examine them minutely, with the determination to reject the tainted, and to "green" in the open air all such as are intended for planting. The store for use—if any there be—must not be put into damp pits, but into a cool store room, with plenty of charred saw-dust, wood and common ashes, or charcoal dust. Gather girkins and cucumbers for pickling, onions, radish-pods, and nasturtiums. Remove litter of every kind, and burn as much as possible of it to spread over the land, with salt and lime, particularly where potatoes have been digged. No time must be lost to bring the garden into neat trim by sedulous weeding, earthing up in dry weather, hoeing, staking plants, and taking away expended or seed-bearing (ripe) crops.

Hardy Fruit Department.

Strawberries require the earliest attention, in so far as respects planting. This is the season of autumn to insure success; if it be permitted to pass over, nothing should be attempted till March. There is a question as to depth of soil. Heretofore we have been taught to trench two feet; to incorporate old, well-decayed dung with the earth, and, if possible, to select a soft, friable, and rich pasture loam. So far is well, unless as regards depth of staple. Upon this one point a writer has lately recommended a departure from that condition, maintaining that a deep bed of rich earth promotes the growth of luxuriant foliage at the expense of fruit-bearing; and therefore he advises that the bed be paved at the depth of a few inches (say 8 to 10, if we mistake not), so as to constrain the roots to extend laterally and ramify upon that brick or close-stone surface. Experience is at a fault with me. The prolificity of potted plants supports the opinion that the new theory has something of truth in it; on the other hand, crops so fine have been, and are produced, from deep tillage, that one does not feel authorised to repudiate it. At all events, I would say, proceed cautiously in the way of experiment; but by all means try the paving with the *old pine*, a variety delicious beyond compare in flavour, but a shy bearer—one which tends to predominance of herbage. As to sorts, always take the first plantlets on the string next the parent; and plant with care, to expand the roots two feet apart.

A fine prolific sort from Scotland (not the "beehive"), rich in taste, deep-coloured, and *extremely early*, I have seen at Mr. Cuthill's nursery, Denmark-hill, and believe it worthy; then will follow the Keen's Seedling, famed for abundance of early fruit; next the Pine and the British Queen, and last of all the true "Elton." These, unless we name the genuine Hautbois and the two Alpinos, are sufficient.

From Mr. Cuthill's new pamphlet of "Practical Instructions," just received, I find the name of the Scotch strawberry to be *The Black Prince*.

Nail all the fruit trees in the regular order; the wet season has kept them in a constant state of growth. Protect grapes (if any ripen) from wasps and large flies, cut back the laterals close, and admit as much of sun and air as possible.

Forced Fruits.

Attend to the melons; give air at the back, and all the sun that can be commanded.

The latest grapes demand much care; cold *dry* air will not hurt them, but damp and mildew soon ruin a crop, more especially that of "West's St. Peters." Light strong fires for an hour or two in the morning, and open the ventilators to allow a free passage for the egress of vapour. In dry nights, a current of air from below, passing to openings at the upper part of the back-wall, will be a preservative.

Pines.—Finally re-pot the succession plants, and keep up a strong growing heat. Those large plants destined for fruit should be brought into a separate house, to be gradually dried off.

This plan is pursued by those gardeners who are required to have a great stock of fruit by a certain period of spring and summer; the plants are kept cool till nearly the end of the year, and receive very little water, excepting by the syringe as a sort of *dewing* toward sunset. By such treatment a check is given, the juices become incrassated during the long season of torpor, and growth is converted to fertility.

Greenhouse and Flower Pits.

Introduce all the winter store of pelargoniums (large and small), verbenas, and other tender plants which are intended to ornament the pleasure grounds next year. Avoid the great error of permitting plants to remain and die in the parterres; it is a slovenly practice: neatness and order should be substituted for it. Air must be freely admitted into the houses, and shade maintained for a time during the power of the sun. Nothing is more injurious to plants than the incautious change of plants from under glass to the open air in spring, and *vice versâ* in the autumn. Plants ought never to be crowded in the houses, every one should stand free of its neighbour.

On the subject of *Chinese chrysanthemums*, which if well managed become so ornamental in November, "Paxton's Magazine" says—"The tops may still be taken off in the early part of the month to obtain dwarf plants to flower late. They should be taken from the plants growing in the open garden, planted singly in pots of light earth, and placed in a gentle bottom heat. Large plants may be taken up from the borders, and treated as greenhouse specimen plants," that is, "placed in a close shaded frame, and gently damped over the foliage every morning with a fine syringe till the roots have taken fresh hold, and are capable of taking in fluid enough to *make good* the increased transpiration from the leaves which the removal from the shade and more exposure to fresh air would occasion."

The greenhouse, stove, and orchard-house should be well ventilated, and freed as much as possible from shade. The plants may be occasionally syringed in the morning, being careful not to sprinkle the flowers. Leaves decay rapidly now; such leaves should be continually removed, and also the flowers that have passed their beauty.

Lisianthus Russellianus is a plant little seen, and generally ill treated. From September till February, Mr. Cuthill tells us in his new pamphlet, they are kept on a shelf within a foot of the glass where camellias are. They are not moved or touched, even to remove a dead leaf, during the whole of the winter, just keeping them moist enough to prevent flagging. Never water on the surface, but always in the pans on which the pots stand. Grown to perfection, this plant is most beautiful.

Every day's report promulgates more alarm concerning the potatoes. Where the disease exists, there—be the soil what it may, loam, sand, or poor gravel—the foliage perishes with a rapidity that is quite marvellous. The stock *must* be diseased at heart; but yet the suddenness of attack still argues an atmospheric blight. Evidence, however, gains force that if the haulm be immediately obliterated and the tubers be permitted to *remain in the ground* the damage becomes far less. Several instances have lately come to light; therefore it is recommended either to cut close or pull up the haulm, to cover the site of the tubers prior to frost, with any litter at hand, and from henceforth to dig only as required for use. Seme experience will thus be obtained, and a good quantity of store preserved for winter food.—August 21.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR AUGUST.

Our readers are, doubtless, prepared to receive from us a very unsatisfactory report of the progress of harvest work, in nearly all parts of the United Kingdom, for the past month. We regret to observe that we have to present ourselves to their notice under circumstance of trying difficulty. Since our last we have had almost a daily succession of wet weather; and which, as might be anticipated, has had a most prejudicial effect, not only upon the wheats—cut as well as uncut—but likewise upon spring corn in general. In very many instances wheat has lain in the fields nearly a whole month, without an opportunity being afforded the growers of carting it; and not a few of the farmers in the southern and western counties have, to prevent the chance of a total loss of the crop, stacked their wheat in the fields. From the 1st until quite the 22nd of the month, very little wheat was carried, although at least two-thirds of it had been cut. In the last week of the month, however, which proved comparatively fine, immense quantities were carried, though in very bad condition. Up to the time we are writing, great apprehensions are entertained as to the fate of the now outstanding crops, as it is evident that, without the aid of fine weather, a large portion of them must become unfit for consumption. We have known instances in which the wheat has become sprouted prior to being cut; and the damage sustained by that which has been sickled must be very extensive. That our markets will be principally supplied with damp and otherwise inferior parcels for several months to come, is but too certain; and it is equally evident that we shall require importations from abroad to make up

the deficiency in the quality of home-grown wheat. In support of this remark, we may state that the reports of the acreable yield of the wheats are becoming worse, especially in Essex and Kent—in which counties the produce will, doubtless, prove beneath an average—and those respecting potatoes are nearly as bad as at the corresponding period in 1846. Some publications have asserted that these reports are the offspring solely of speculators in foreign corn; but, having an intimate knowledge of facts, we have every reason to know that such is not the case. All connected with the soil must admit that large quantities of moisture at this season of the year cannot fail to have a most injurious effect upon the root (which now requires heat to ripen), and that, when "pitted" in a damp state, a large portion is likely to become rotten. Most of the growers have forced their potatoes for sale, at very low prices, under the impression they will not keep during the winter. The quantity of barley and other spring corn yet secured, though mostly ripe, is small; and we are looking forward with considerable anxiety to the progress of harvest during the next fortnight.

It appears to be a pretty general impression that wheat and all other articles of grain will be selling at relatively high prices during the winter months, and that a further advance in them is certain. There are, however, two important facts to be considered, viz., the quantity of old wheat at this time in the country, and the extent of the arrivals from abroad during the remainder of the year. Last season's crop was unquestionably a good one, both as respects quantity and quality; and we believe there is a sufficient supply on hand to meet consumption for quite two months from the present time. On the continent, as well as throughout the United States, wheat and flour are selling at low prices; and very large supplies could be brought hither, were they required, during the present year. Yet we may observe that, were our farmers to withhold their wheats for a time, a sudden and perhaps extensive rise would be the result; but to anticipate the continuance of very high prices during the winter would be hardly justifiable, even in the present state of things. We may observe, however, that speculation has been commenced to some extent, both at home and abroad. Large parcels of bonded wheats have been taken, in London and the outports, at an advance of from 4s. to 7s. per quarter; and very extensive orders have been sent out to New York for the purchase of flour, at advanced quotations. These speculations are, we conceive, likely to realize a good return.

The supplies of English wheat brought forward have been tolerably good; those of all other articles small.

The turnip crop has continued to flourish during the wet weather, and a very heavy return may be expected. That of seeds, however, has sustained considerable damage; hence, higher prices have been readily paid for most descriptions.

The provision markets generally have been steady, at mostly full prices; but both hay and straw, which have been forwarded for sale in considerable quantities, have sold heavily, at low figures.

In Ireland and Scotland heavy rains have fallen throughout the month, particularly in the former country; and very unsatisfactory reports have arrived thence on the subject of the potato crop. The corn trade has ruled very firm, and prices generally have had an upward tendency. The cattle trade has been far from brisk.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

On the whole, the metropolitan, as well as the large provincial, markets have been fairly supplied with home-fed stock in the course of the month just concluded. We have, however, to report a falling off in the arrivals from abroad, compared with those at the corresponding period last year, as well as a decrease in the actual supply of meat disposed of. On reference to our quotations it will be seen that beef has sold in Smithfield at low rates of currency; hence, the speculators in foreign cattle —many of whom have sustained heavy losses of late—have operated with considerable caution, and it is a matter of doubt with us whether parties are deriving much profit from the import of either sheep or calves, notwithstanding their quality has somewhat improved.

The two measures proposed by the legislature to check the importation of diseased foreign sheep into this country are not, in our opinion, likely to answer the desired end. Already have persons the power to seize animals exposed for sale in our markets in a state unfit for consumption; and to make a certainty of the disease being stopped, it is absolutely necessary that the stock should either be slaughtered on arrival, or placed in quarantine for at least a fortnight prior to being disposed of. Should the importation of sheep from Holland and Germany be prohibited—which we much doubt—much higher prices for sheep may be calculated upon.

There have again been several severe losses from disease in our flock districts; and not a few of the beasts have suffered to some extent from the long-complained-of epidemic.

The difference in the imports of foreign stock

into London in the past month, with those during August, 1847, will be seen by the annexed statement:—

IMPORTS OF FOREIGN STOCK INTO LONDON.

	Aug., 1847. Head.	Aug., 1848. Head.
Beasts	4,185	2,526
Sheep	18,489	14,266
Lambs	874	871
Calves	1,942	2,135
Total	25,490	19,798
Outports	11,820	6,830
Grand total	37,310	26,628

The above comparison shows a total falling off in the past month's supply of 10,682 head, which has, however, exceeded that received in July to some extent.

The actual supplies of English and foreign stock on sale in Smithfield, since our last, have been thus:—

	Head.
Beasts	17,975
Cows	497
Sheep and lambs	153,280
Calves	3,840
Pigs	2,443

COMPARISON OF SUPPLIES.

	Aug., 1845. Head.	Aug., 1846. Head.	Aug., 1847. Head.
Beasts	16,228	16,974	19,073
Cows	525	535	878
Sheep and lambs	151,330	178,790	225,390
Calves	2,205	2,567	3,860
Pigs	2,511	1,845	2,227

The bullock supplies have been derived as under:

	Head.
Northern districts	3,600
Eastern, western, midland, do.	8,850
Other parts of England	1,480
Scotland	960
Ireland	600

COMPARISON OF PRICES.

Per 8 lbs. to sink the offal.

	Aug., 1847. s. d.	s. d.	Aug., 1848. s. d.	s. d.
Beef, from	3 4	to 5 6	2 10	to 4 4
Mutton	3 8	5 4	3 10	5 0
Lamb	4 10	6 2	4 0	5 2
Veal	4 0	5 0	3 6	4 2
Pork	4 0	4 10	3 8	4 6

Owing to the unfavourable weather, very limited supplies of country-killed meat have been on sale in Newgate and Leadenhall markets; but those slaughtered in the metropolis having been tolerably good, the demand has been far from active, at but little alteration in the general quotations.

NORTH NORTHUMBERLAND.

Anxious to make our present report as brief and perfect as circumstances will allow, we have delayed writing until the sickle could be seen in operation; and although it can only be said that reaping has partially commenced on the earliest situations, present appearances do not indicate a general harvest over this northern district before the end of the month; and unless the weather prove very favourable for maturing the crops, it will be late in September ere many fields of spring-sown wheat will be fully ripe. Wheat was cut, near the sea-coast, as early as the 15th; and to the north, near the Tweed river, on the fine, dry, friable soils, oat and barley-reaping has also commenced; and, with fine weather, a general harvest will commence on or before the time alluded to. Labourers are plentiful, every village and hamlet being furnished with an ample quota of the "fine pisantry" from the sister green isle; but as the crops ripen very unevenly (as we anticipated some time ago), our harvest in this county will be very slow and protracted. Having had very extensive journeyings through the rural districts lately, we are sorry to report the grain crops as generally short of straw. Wheat small in the ear; and, among the white varieties, smut prevails to an unusual extent. Whether this is owing to any atmospheric agency, or a want of proper precaution in the preparation of seed, we do not feel warranted to assert; but that the bulk of straw will fall far short of an average, over all the cereal crops, is now too evident to every practical observer. Beans and peas, which never promised a large return, have lately suffered a blight, and on many fields are swarming with black lice or insects, which will much retard their maturing the pod. Our hay-crop, which was generally light, was very well got in. The weather continued dry and withering up to the 17th, when some heavy rain fell; 18th, fine until nightfall, when we experienced a storm from S.S.W.—very wet all night, and a strong gale of wind all next day; 21st, 22nd, and 23rd, wet, and all out-door labour suspended. The wind is now northerly and cold, which will preserve wheat in the sheaf, or, when lodged on the ground, from sprouting. Very little old grain remains in the hands of the farmers of this division of the county; and we doubt much whether a half, or even a third, is in granary, or held by our merchants, compared with the usual quantity generally held by such parties on speculation or otherwise, awaiting the first thrashing of the new crop. It is impossible to form a fixed opinion as to the acreage yield of the forthcoming crop; but, in estimated quantities that have been submitted to our notice, the early autumn-sown wheats are likely to produce a full produce from the sheaf, but less per acre than usual. The spring-sown varieties being only half matured, looking at the present ungenial weather, it is difficult to come to other conclusion than *that we cannot expect a large produce.* We have experienced the very reverse of the southern counties, where rain seems to have fallen in abundance during July and the first weeks of August. Our turnip crop has suffered from the effects of drought, and present appearances are not flattering. On all deep loams, strong or tenacious subsoils, with very few exceptions, the plant has come badly away, and looks stunted; yet, with fresh autumn weather, a fair crop may be looked forward to here; and then a good field of swedes are to be met with on the heavy loams over Bambro' Island and Norhamshire; and up the vale of Till, over the firm sandy loams, down the Tweed, from Corn Hill to Berwick, the entire crop of turnips has a more favourable appearance. It is painful to write as if desponding. We must all humbly rely on the wise dispensations of Providence. One of our chief reliances for soothing the

fear of want on the cotter's table "was our confidence of the safety of the potato crop." Nor can we report the appearances of the field crop as otherwise than looking favourable up to this day; but, during the last week, the garden varieties are all more or less affected with the *plague spots* of '45-6. Whether the disease may extend itself over the fields, time only can determine. Pastures are not yielding much feed lately, and fat stock are not plentiful; but our markets are well supplied from Scotland. The disease amongst the horned cattle has made its appearance in different situations in this vicinity, and in general has proved fatal to cows in milk. Should it prove infectious, or extend itself, serious consequences will await us. Our farm servants generally keep a cow, and the loss will be severe.—Aug. 24.

SOMERSETSHIRE.

It is generally acknowledged we have not had a more difficult harvest for years, or more corn injured from the weather; we have not had since the beginning of the month twenty-four hours without more or less rain; on the 9th, we had some heavy thunder-storms; on the 12th, some wheat was secured in pretty good condition after the reapers, and some in very bad; on the 13th, we had close rain with little intermission until the 15th; the consequence of this was, the wheat in stetch and that laid not cut was grown more or less—say on an average five corns out of twenty laid down were more than half grown: this applies to our best white wheats, which have suffered most, very little in proportion being sound or in good condition, since reaping and securing in winnows every day has been the practice; it is to be remarked that last week we had fine night and morning, wet afternoon—this week, wet mornings and fine afternoons; on the 20th, storms most of the day; on the 21st, very heavy rain and high wind for three or four hours; from before 8 to 12 o'clock stormy—afterwards a very high changing wind. A good deal of wheat was secured the next day; heavy storms in the morning; high wind, dry afternoon: wheat carried not in good condition; 23rd, a little rain in the morning, fine afternoon; 24th, storm in the morning before 9 o'clock, fine blowing and drying afternoon: wheat carried and secured in pretty fair condition—peas and winter beans secured; some rain last night and this morning, dry the rest of the day: glass slowly rising, air very close and warm. We are now busy reaping and securing late high grown wheat and those on the peat moor, and these will be our soundest wheats, and we are glad to say but little injured by growing out; with the exception of the rust, which is not so bad as last year, we think our late and moor wheats will be superior to last year in quality; the principal loss in these will be from the high wind of the 21st, which beat a good deal of corn out. Reaping has been very much protracted; more done this week than any one before, the greater part of the wheat being put in small mow as cut; this will come fit for market much earlier than that mowed in yard, and by this means we quite hope to secure a fair portion of wheat for seed and for grinding, though fully the greatest damage is on land from which we have our best white wheats; our early-sown red will be the best conditioned and soundest sample. The oats are ripe, and will be likely to fall out in harvesting. Some good barley quite fit in early land; quantity larger, and if we have fine weather to take it quickly, nearly equal to last year. Oats a good crop, and of fine quality. Winter beans mostly harvested; rather soft, not equal in quantity and quality to last year. Peas have been much wasted in harvesting, and could not be secured until this week. Vetches will be scarce; not many saved for seed, and of these a great portion will be spoiled in harvesting; quality very inferior. We have been noticing this day the prospect and appearance on the peat moor, from a spot where we can look down over a large plain surface, six to seven miles in length, and three to four in breadth. Seventy to eighty acres in one-hundred is arable, and on nearly fifty to the one-hundred there is either wheat uncut or in windmow, and these cannot be hurried home, as the roads and lands cannot bear the waggons until we have some fine dry weather; and we are in hopes our wheat from this district will be equal to last year. Our pasture lands are as wet as in winter, much of the herbage being spoiled by the feet of the cattle. We are sorry to have to report of the potatoes a loss of full three parts out of four in bad ones, besides the smallness and total failure of those put in late. Nowhere have we seen this last week green haulm as we used to up to the frosts. We are now fearful the sound ones for winter will not exceed last year, out of four times the quantity put in.—August 25.

WORCESTERSHIRE AND GLOUCESTERSHIRE.

In the vales and warm lying districts of the two counties a considerable breadth of wheat was cut during the early part of the present month; and, though interrupted and delayed by the weather, cutting has continued up to the present time. A trifling proportion of the earliest crop was stacked in fair condition; but during the last seventeen or eighteen days there has hardly been twelve continuous hours of dry weather; the consequence is that a considerable quantity of wheat has been carried in very indifferent condition, and I fear the grain already harvested will not be saleable until the stacks have stood for some months. A dry and frosty winter may improve the condition of the sample; but if the weather continues unsettled, the chief dependance of the millers, for some months to come, will be placed upon the stocks of old wheat, which, in this neighbourhood, are fortunately above an average. The rise in the price of wheat to 7s. per bushel for good samples, may induce holders to come to market. The stock of old wheat is probably greater in this district than in others, where a larger breadth is grown, for the following reasons:—Upon the Cotswold hills the lateness of the harvests cause the wheat to be harvested in such condition that the grain requires to remain in the stack a considerable time before it becomes saleable; indeed, it is seldom brought to market in any great quantity until the following summer. A rather extensive buyer informs me that the hill farmers are now bringing their supplies of wheat to market more liberally than they hitherto have done during the present season. The unseasonable harvest weather has undoubtedly seriously injured both the produce and quality of the grain crops; but in many instances more damage will arise from the hasty manner in which some of the wheat has been carried, than from the injury it has sustained in the field. It is true some complaints are heard of the vegetation of the grain, but this is chiefly confined to the laid crops: the temperature having been low, with gleams of sunshine and drying winds between the storms of rain, the injury from this cause has not yet been so great as might have been expected from so long a continuance of unfavourable weather. The greatest damage has been occasioned by the high winds and storms of hail and rain—particularly on the 21st and 22nd—to the over-ripe standing crops. In some very exposed situations I have seen crops of barley damaged (from the ears being broken off, and from the shedding of the grain) to the extent of one fifth, and even more, in those parts of the fields exposed to the full power of the wind; and in some instances that have come to my knowledge, an estimated loss of five or six bushels per acre has been occasioned to over-ripe

standing crops of wheat. I will not say the loss from this cause has generally been so extensive, as the storms have been very partial in their influence; but I fear it will be found very considerable. Pasture continues abundant, and grazing stock appears to thrive well. The supply of fat stock brought to market has been more than equal to the demand; but the prices are sufficiently remunerative to the grazier, considering the reasonable price at which lean stock were purchased in the spring. The potato disease has run its course on the moist clayey soils, to the loss and inconvenience of the cottager; by him the loss is seriously felt, but it is but the continuance of the annual warning for the cottager to place more dependance upon vegetable crops that are less subject to disease. On dry soils, as is generally the case, the potato disease is less virulent; and even where the tops have died off prematurely, the tubers remain sound, and of a good quality, in many instances that have come under observation. On the exposed parts of the Cotswolds but little grain was cut previously to the 10th and 12th of this month, and the proportion is even now small; harvest generally being about two weeks later upon the hills than in the vale. On the hills the turnips are far more promising than last year's crop. I have said but little in previous reports relating to hill farming; and as you wish me to allude to the farming practices of the district as they occur in their annual round, as well as to give the result of observations and inquiries respecting the crops, I will now proceed to give a brief outline of the preparation of the soil for wheat, generally adopted by the Cotswold farmers. Wheat follows a two years' crops of mixed seeds, the first year's crop being usually mown for hay, and the second grazed, chiefly with sheep. The land for wheat is ploughed shallow and flat, a skim coulter being used to cover-in the edge of the furrow-slice. Wheat is drilled or sown broadcast in August, and sometimes earlier, so that the crop remains more than a twelvemonth upon the ground: in less exposed situations the time of sowing does not differ from other districts of a similar character of soil. The land after sowing is trodden by a flock of sheep; or a wooden pegroll—producing a similar effect to the treading of sheep—is employed to consolidate the soil as a preventive against the ravages of the wire-worm, and to guard against the influence which the frosts and thaws of winter are found to have, in elevating the wheat plant from a shallow limestone soil. If the plant becomes too luxuriant, it is fed off with sheep, and the treading consequent upon this practice aids in giving the required solidity to the soil. At the annual ploughing match of the Winchcomb Farmers' Club, held upon the hills at the village of Ford, the land selected for a trial of skill was in preparation for wheat: the competing ploughs appeared, with one or two exceptions, well adapted for the system of shallow ploughing considered essential by the farmers of this district. Prizes are offered by the club for pair-horse teams, ox teams, and three or four-horse teams; and a prize cup, given by the landlords of the district, is competed for by farmers' sons. The prize in the latter class was taken by Mr. Lane, junior; and he not only distanced all his competitors, but his work was considered the straightest and best in the field. The competitors in the several classes numbered twenty-six, and the ploughing was pronounced by the judges, Messrs. Edwards, Cooke, and Hyaitt, to be remarkably well done, and shews a marked improvement upon previous meetings. The work of two or three of the pair-horse ploughs, as well as one drawn by four mules, was well done. The winner of the third prize in his class, a Scotchman, who held an iron swing plough of the Scotch make, would probably have taken the first prize if his work had partaken more of the Gloucestershire hill system. His plough excited much attention among the farmers, being the only swing-plough upon the ground: it appeared well suited for deep ploughing, where the furrow is required to be set much upon an edge; but the farmer must adapt his implements to his soil and to his system of working the land. In the case of the Scotch plough the absence of a wheel rendered shallow ploughing a far more difficult task to the ploughman. We have one fault to find with the meeting, and that is with the variety of teams brought into the field for competition in separate classes. If ploughing to the depth of two or three inches on a light soil is the right plan, why should there be a necessity for three horses or for four oxen, with an additional driver to each plough, when a pair of horses without a driver is capable of performing at least an equal quantity of work? It appears the amount of the premiums is in favour of the pair-horse ploughs; but I think the premiums ought to be confined to this class, or to ploughs drawn by two oxen, as it is the most economical system, and, with such a soil and such a standard depth, it can be the only system deserving encouragement.—Aug. 24.

NORTH WEST SOMERSET.

The 23rd of August has arrived. There has not been a dry day in the month. In the second week a dense atmosphere accompanied the rain which contributed to the growth of the wheats cut and uncut. We have had in the past and this week, gusts of wind, the "stooks" or stitches have been levelled to the ground as fast as set up, the ripe wheat uncut has been thrashed out—*double the quantity usually sown.* In the late districts there has not been a sheaf of corn secured; in the early very little has been in good condition and will not be fit for the millers' purpose for months to come. Consumers of bread must make up their minds to eat "pudding-bread." Clover and "seeds" in the barleys are, in numerous fields, topping the crop; fine weather will be necessary to save it for malting purposes, which will be impossible should the present unfavourable weather continue much longer: we see no omens of its breaking, it rains in torrents while we are writing. Grass is getting rank and sour for want of sun, and stock will not do well. There is but one opinion of the potatoes early and late: we meet with no persons that do not admit the crop to be lost, decomposition of those dug goes on, and the quality of those not decayed gets worse daily.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF AUGUST.

We have not for some years had so unfavourable a month of August for harvest operations as that now about to close. Scarcely a day has passed, since our last notice, without heavy rain in some quarter of the kingdom; the greatest quantity has, however, fallen in the southern and western parts

of the island; and there the most mischief has consequently been done. The wheat crop was generally ripe in the early districts in the early part of the month; and notwithstanding frequent showers, farmers commenced reaping here and there: favoured by intervals of sunshine, they succeeded in saving some portion of the produce in good order, but the greater part carried during the last fortnight has been got-in in very bad condition. In very many cases the corn was unavoidably exposed in the fields for weeks, being drenched one day and partially dried the following: the most trying changes of temperature have likewise occurred; and it is almost certain that a very large proportion of the grain crops will be of bad quality. In all the southern and western counties sprouted corn will, we fear, be very common. The very wet character of the summer encouraged the growth of weeds in unusual abundance; and where the crops were beaten down and lodged, they became almost over-grown; hence the rain and warm temperature caused the grain to vegetate in the ear; indeed, where not exposed to the same extent of evil—we mean where cut and standing on the fields in shock—the combination of moisture and warmth has led to the same result; so that the mealing properties of the wheat have in many instances been greatly deteriorated.

The above remarks are intended to apply to the state of affairs in the south and west: in the north and east matters are not, we are happy to state, nearly so bad. The grain being less forward there was not injured to the same extent as in the earlier localities; and if the weather should now continue fine, the later districts would be infinitely better off than the early. Taking the kingdom as a whole, there is, however, reason to fear that the produce of food will be seriously defective, both as regards quantity and quality, and that it will again become necessary to import largely from abroad.

The spring-sown crops, owing to the late sowing, have escaped better than wheat; and for the breadth of land under barley and oats the yield will not, we think, be bad.

The apprehensions expressed a month ago, relative to potatoes, have unhappily proved too well founded; the disease having spread rapidly since our last, from the west, where it first appeared, to the east, and is now beginning to show itself generally in the north of England and Scotland. Whether any portion of the potato crop is quite free of the disorder may be questioned; for it is found that those apparently sound when dug, go off when a short time exposed to the air; and it is doubtful whether it would be advisable to run the risk of depending on this root for a supply of food later in the year. This appears to be the prevailing opinion among the growers; and all are anxious to sell as fast as possible.

Large supplies of the article have been poured into the different markets during the month, which has caused a great fall in the price, and, to a certain extent, diminished the consumption of bread. In many parts of the country the poorer classes are almost subsisting on potatoes just now; and so long as they continue so cheap as at present, they will, undoubtedly, be very extensively used. This must, however, have an end; and when this resource shall hereafter fail, the present abundance will, we apprehend, be followed by scarcity, and a corresponding amount of misery.

Our prospects for the winter are certainly far from encouraging; but we are not disposed to magnify the evils, and shall consequently bring forward such facts as appear to us likely to counteract any great advance in prices.

As the potato disease has been the principal cause of the recent advance in quotations of wheat, we shall in the first place direct attention to that subject. That the failure will be extensive we admit; but from the unusually large quantity planted, and the abundance of the yield to the acre, we believe that the quantity of potatoes available for food, if consumed early, will be much greater than it was either last year or in 1846. The plan which is being adopted is evidently the right one; the affected and partially affected tubers are being used for feeding pigs, poultry, &c.; and the sound potatoes are being sent to market as rapidly as possible. Of the early sorts comparatively little has been lost; all having been used in one way or the other. The later kinds, as they arrive at maturity, will probably be disposed of in the same way; hence, during all this time there must be a saving of other articles to meet future contingences. The stocks of old wheat in the farmers' hands, which are allowed to be considerable, are not being drawn upon so extensively as would otherwise be the case. The importations from abroad are not going into consumption: orders on rather a large scale are meanwhile being sent to America, the Mediterranean, the Black Sea, and the Baltic; and by the time the potatoes shall have become exhausted, we are likely to have either here, or on passage to this country, a considerable quantity of wheat, Indian corn, &c., all to be admitted after February free of duty.

It may further be remarked that, though the quality of the new corn will be bad in many districts, the yield is not represented as particularly deficient. As compared with either of the last two years the produce will no doubt show a material falling off; but these were seasons of great abundance; the temporarily high range of prices being caused in

1846 by the almost total loss of the potatoes, and in 1847 by the trifling extent to which that root was cultivated.

This year we have a large breadth and large yield of potatoes; their management and the nature of the disease are better understood than before. The wheat crop is probably not much below an average, and the farmers certainly hold more old wheat than was the case in either of the two preceding years at the corresponding period; we trust, therefore, that the evil predictions now so common may not be fulfilled, and that prices of food may not rise so high as to press seriously on the poorer classes of the community.

Our greatest fears are as regards Ireland; there, unfortunately, there is no reserve; the potato crop is almost the sole dependence of a large portion of the inhabitants, and this is being rapidly consumed: to contemplate the result, if the disease should unhappily destroy what may be kept back as a provision for the winter, is indeed fearful.

The trade in wheat has been a good deal excited during the month, but not nearly to the same extent as last year about this time. The severe losses then sustained have not yet been forgotten; and there is neither the power nor the inclination to go into large speculations. The farmers have at no period been anxious sellers, and latterly they have been pretty closely occupied in reaping or carting corn, as opportunities have offered; hence but very moderate supplies have been brought forward; owing, however, to the falling off in the demand for bread, in consequence of the extra consumption of potatoes, the millers have conducted their operations with more than ordinary caution, or the rise in prices would certainly have been greater; still a material advance has been established, wheat being at present 8s. to 10s. per qr. higher than it was at this period last month.

The quantity brought forward at Mark Lane has been quite moderate; but until about the middle of the month there was an absence of excitement, and the supplies proved quite equal to the demand.

On Monday, the 7th inst., there were evident symptoms of weakness about the market, although the reports relative to potatoes had then already become somewhat alarming; factors commenced, however, by asking full terms, and most of the sales were at about the rates current at the close of July, and in no single instance did the decline submitted to exceed 1s. per qr.

During the greater part of the following week the weather was broken and unfavourable for carting grain; and the 14th being a very wet day, considerably enhanced rates were asked. This was the first occasion on which any quantity of new wheat was exhibited: besides several hundred quarters from Essex, Kent, and Suffolk, several samples grown in Lincolnshire, Cambridgeshire, &c., were shown. Some of the samples were handsome, and were estimated to weigh 63 to 64 lbs. per bushel; but the major part was composed of inferior and moderately good qualities; the prices realized varied from 48s. up to 56s. for red, and from 54s. up to 63s. for white. Old wheat was at the same time quoted 2s. to 3s. per qr. higher than on that day se'nnight, which advance was principally caused by a large purchase made by a firm engaged in the Irish trade. From the 14th to the 21st we had again much rain; and, on the latter day there was a decidedly small show of wheat. Under these circumstances factors deemed themselves warranted in further raising their pretensions, but their demands were not so readily responded to by buyers as had been calculated on. The prices asked in the first instance were at least 5s. per qr. above those previously current; this important rise was firmly resisted by the millers; but ultimately the stands were cleared at rates 2s. to 3s. per qr. above those of the Monday before.

The importations of foreign wheat have not been particularly large; still about 60,000 qrs. have arrived at this port during the month. The rise which has taken place in the averages, and the certainty that the duty will recede several shillings per qr., has caused importers to land under lock, and hardly any portion of the supply has been entered for home consumption. The stocks of free wheat in granary have, therefore, been still further diminished, and are now very light. Under these circumstances holders of the latter have manifested no anxiety to press sales; and though the advance on free has not been quite so great as on English, a material rise has been established. For fine Rostock 63s. to 65s., and for other sorts of red Baltic and Hamburg wheat from 58s. to 62s. per qr., duty paid, has been realized of late; which, compared with the value of the same sorts at the close of last month, shows an advance of about 8s. per quarter.

For parcels in bond relatively higher terms have been paid, in anticipation of a material reduction in the duty, and a large business has been done in floating cargoes, and parcels free on board at foreign ports.

Latterly such very high prices have been asked as in some measure to check business. For the finer qualities of Danzig 56s. per qr., cost and freight, has been demanded; and Polish Odessa has been held at 48s. to 52s. per qr., including freight.

On the whole a good many orders have been sent out at such limits as are likely to secure their execution. Whether these speculations will turn out advantageously will in a great measure depend upon the weather, but there is certainly not much chance of quotations receding.

The advance which has taken place in the value of wheat has obliged the millers to put up prices of flour: the first movement upwards was on the 14th, when the top quotation, which had previously been 46s., rose to 50s., and on the following Monday a further improvement of 3s. per sack took place. The value of other descriptions of flour has undergone a corresponding enhancement, notwithstanding which the millers complain that the price of the manufactured article is relatively lower than that of the raw material, and that they are consequently working at a disadvantage. From America we have hitherto received but very trifling supplies, and the stock in warehouse being small, the transactions have, necessarily, been on a restricted scale; superfine brands would at present fetch 30s. to 32s. per brl., but most of that here is of ordinary quality.

Scarcely any English barley has come to hand, and though the receipts from abroad have not been unimportant, prices have steadily risen. The quantity taken off the market by buyers from different parts of the country has been large, and there is just now comparatively little on board ship at this port. The rise in prices since the close of July cannot be estimated at less than 3s. per qr., good sweet qualities, weighing 53 to 54 lbs. per bush., having lately realized 28s. to 30s. per qr. duty paid. As yet hardly a sample of new English has appeared at Mark Lane; but from what we hear, the quality of a very large proportion of this year's growth is likely to turn out very coarse; really fine malting sorts will therefore, in all probability, command high rates when the maltsters begin to purchase. The belief that superior kinds of barley will be scarce has caused the best descriptions of malt to be held high, and such could not now be bought so cheap as at the end of last month by about 3s. per qr., whilst the advance on the common kinds may be noted at 1s. to 2s. per qr. Stocks of this article are by no means heavy, and if the yield of barley should prove no better than expected, malt would rise much higher than it is at present.

The market has been indifferently supplied with oats of home growth, and during the first week or two the arrivals from abroad were likewise moderate. Subsequently, however, we had large supplies from abroad, particularly from the 14th to 21st, upwards of 60,000 qrs. having come to hand within that period. The opinion we ventured to express in our last monthly article as to the probable range of prices has turned out tolerably correct. No material rise has, it is true, hitherto taken place in quotations, but the dealers have lately manifested a decided disposition to purchase, and, notwithstanding the liberal character of the supplies from abroad, the value of the article has rather tended upwards. The prevailing impression now is, that for some time to come the arrivals from foreign countries are likely to be moderate; and as there is not much probability of shipments of importance being made from Ireland, we are inclined to think that a moderate rise in quotations may be calculated on.

Though but very few English beans have appeared at Mark Lane, the supply has proved about equal to the demand; and whilst prices of almost every other article have risen materially, the advance in the value of beans has been comparatively trifling. Until the 21st there was absolutely no rise; but since then 2s. to 3s. per qr. more has, in partial instances, been paid for fine dry qualities. Egyptian beans, of which we have still a good stock in granary, have met a steady demand at 27s. to 28s. per qr., according to quality, being about 2s. per qr. above what they were selling at last month.

Peas have lately been in lively request, an extra consumption of this article being calculated on in consequence of the potato disease. The first samples which were brought to market towards the close of July brought only 36s. to 38s. per qr.; from this point prices rose rapidly, and within the last week we have had buyers at 46s. to 48s. per qr. Hog peas have meanwhile advanced to 44s. and 45s. per qr.; and there has also been a good deal of inquiry for foreign white peas, at materially enhanced rates, such sorts as were freely offered a month ago at 35s. to 36s. per qr. being at present worth 44s. to 45s. per qr.

Owing to the liberal manner in which the Irish markets have been supplied with potatoes, the consumption of Indian corn has greatly fallen off there, hence comparatively few purchases of the article were made in the English markets during the first two or three weeks in August. This, however, did not produce much effect on prices, as holders calculated on a large demand later in the year. Lately there has been a speculative inquiry, both for parcels on the spot and for cargoes to arrive, and prices are now fully as high as they were at the period when we last wrote, and floating parcels of Galatz could not be purchased below 36s. to 38s. per qr., cost and freight.

The upward movement in prices of bread stuffs in the British markets, and the bad accounts of the probable result of our harvest, have caused a good deal of excitement at those ports on the continent of Europe from which we are in the habit of drawing supplies; and, though affairs had remained tolerably quiet in the American markets up to the date of our last advices, we may expect soon to hear of an advance having taken place at the other side of the Atlantic. That we shall not be able to obtain large foreign supplies, except at rather high prices,

is tolerably certain, as the merchants abroad will not be slow to profit by our wants.

The crops in America have, we are led to believe, returned an abundant yield, but the growers having for two seasons past been accustomed to high rates, are not likely to supply the markets freely until some further advance shall have taken place. The latest advices from New York are of the 7th August: good brands of Western Canal flour were then quoted 5⅛ to 5¼ d. per brl., at which rates the demand had not been brisk, and the shipments to Great Britain had up to that time been only moderate. Of Indian corn the exports had been rather considerable, and stocks of that article were abundant, so that continued supplies from the United States may be looked for.

The accounts from the continent of Europe in regard to the harvest are, on the whole, of a satisfactory character; but owing to the recent advances in the British markets, and the prevailing belief that we shall require considerable supplies, prices have risen on the other side.

By the most recent advices from Dantzic, 19th August, we learn that 47s. per qr. had been paid for 60 lasts high mixed, and 43s. to 44s. 6d. for 100 lasts of mixed to fine mixed. Stocks were quite insignificant, and the supplies from the interior had been small, owing to the want of sufficient water in the Vistula to float down the barges. Vessels had been in more request, 4s. per qr. had been paid for London, and 4s. 6d. per qr. for Liverpool.

From Rostock, Stettin, and neighbouring ports, the reports speak very well of the crops; notwithstanding which, wheat had advanced, in anticipation of a large British demand: 42s. to 43s. had been demanded for the lighter, and 44s. to 46s. per qr. for the heavier sorts.

At Hamburgh, on the 22nd, the top quotation for wheat was 48s., and for parcels to be shipped from out ports as much as 45s. per qr. free on board had been asked.

In the Dutch and Belgian markets the tendency has also been upwards, and even in the Mediterranean a rise has also occurred in the value of wheat, in expectation of a deficient harvest in Great Britain.

CURRENCY PER IMPERIAL MEASURE.

	Shillings per Quarter. OLD.		NEW.	
WHEAT, Essex and Kent, white	60	to 68	52	to 66
Ditto, fine selected runs	—	—	66	68
Ditto, red	55	60	55	60
Ditto, extra	60	63	58	62
Ditto, Talavera	63	68	61	66
Norfolk, Lincolnshire and Yorkshire	55	60	—	—
Ditto, white	58	64	—	—
BARLEY, English, malting and distilling	—	—	30	33
Ditto, Chevalier	—	—	34	37
Ditto, grinding	—	—	28	30
MALT .. Essex, Norfolk and Suffolk	—	—	58	60
Kingston, Ware, and town made	—	—	60	65
OATS, Essex and Suffolk	—	—	21	23
Lincolnshire and Yorkshire (Polands)	—	—	23	26
Ditto, feed	—	—	21	24
Devon & West Country, feed or black	—	—	19	20
Northumberland and Scotch, feed	—	—	25	27
Dundalk, Newry, and Belfast, potato	—	—	24	26
Limerick, Sligo, and Westport, potato	—	—	23	25
Ditto, feed	—	—	21	24
Cork, Waterford, Dublin, Youghal, and Clonmel, black	—	—	18	20
Ditto, white	—	—	20	23
Galway	16	20	—	—
RYE	—	—	32	34
FLOUR, best marks (per sack of 280 lbs.)	—	—	48	53
Norfolk and Suffolk, ex-ship	—	—	45	48
BEANS, Mazagan	34	36	—	—
Tick	34	37	—	—
Harrow	36	39	—	—
Pigeon, Heligland	38	40	—	—
Windsor	—	—	—	—
Long pod	—	—	—	—
PEAS, non-boilers	40	43	—	—
White, Essex, and Kent, boilers	43	48	43	44
Ditto, fine Suffolk	45	48	44	46
Maple	42	45	43	44
Hog and grey	40	42	40	42
TARES, winter, per bushel	8	10	—	—
RYE MEAL (per ton)	£7 10s. to £8 0s.			
CAKES, Linseed, English, per 1,000	£11 0s. to £12 0s.			
Ditto, foreign, per ton	£8 0s. to £9 10s			
Rapeseed	£4 15s. to £5			

FOREIGN GRAIN.

	Shillings per Quarter. FREE.		IN BOND.	
WHEAT, American	50	to 58	—	to —
Canada	48	55	—	—
Dantzic and Konigsberg	56	60	48	52
Dantzic, fine white, extra quality	60	66	52	56
Stettin and Hamburgh	56	60	50	56
Buck or Brank	35	37	—	—
MAIZE, white	36	38	—	—
Ditto, yellow	37	40	—	—
PEAS, white boilers	43	45	—	—
Yellow ditto	43	46	—	—
Non-boilers	40	42	—	—
BARLEY, malting	30	33	—	—
Grinding and distilling	24	30	—	—
Hamburgh, Dantzic, Konigsb., & Riga	27	30	—	—
Danish, Mecklenberg, and Pomeranian	25	30	—	—
BEANS	36	38	—	—
Small	37	40	—	—
Egyptian	26	28	—	—
OATS, Dutch, brew, and Poland, Friesland, and Groningen	24	27	—	—
Danish and Swedish	20	23	—	—
Russian	20	23	—	—
FLOUR, American, sweet	28	32	—	—
Ditto, sour	24	27	—	—
Canadian, sweet	27	30	—	—

IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS.

WEEK ENDING:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.	Rye. s.	d.	Beans. s.	d.	Peas. s.	d.
July 15, 1848..	49	1	29	0	20	9	31	0	36	6	37	3
July 22, 1848..	48	11	30	2	20	3	28	3	35	11	36	3
July 29, 1848..	47	11	29	5	20	7	30	2	35	9	36	1
Aug. 5, 1848..	49	5	29	11	21	0	29	4	35	3	34	8
Aug.12, 1848..	50	11	30	1	21	8	29	7	36	0	35	2
Aug.19, 1848..	51	0	30	3	21	5	31	11	37	9	36	3
Aggregate Average of the six weeks which regulates duty	49	6	29	10	20	11	30	1	36	2	35	11
Comparative Average same time last year	71	11	43	7	30	0	51	11	53	4	47	4
DUTIES	8	0	3	0	2	6	3	0	3	0	3	0

ACCOUNT SHEWING THE QUANTITIES OF GRAIN AND FLOUR IMPORTED INTO THE UNITED KINGDOM DURING THE MONTH ENDED 5TH AUGUST, 1848, THE QUANTITIES ADMITTED FOR HOME CONSUMPTION DURING THE SAME MONTH, AND THE QUANTITIES REMAINING IN WAREHOUSE AT THE CLOSE THEREOF.

Species of Grain.	Quantity imported.	Quantity entered for consumption	Quantity remaining in warehouse.
	qrs. bush.	qrs. bush.	qrs. bush.
Wheat, from British Possessions	1618 4	1598 4	20 7
Barley, do.	—	—	—
Oats, do.	—	—	—
Peas, do.	506 3	506 3	—
Beans, do.	—	—	—
Maize or Indian Corn, do.	—	—	—
Wheat, foreign	88200 0	32911 3	115037 1
Barley, do.	85461 7	87379 2	2 01 7
Oats, do.	99246 4	96046 4	9503 3
Rye	2026 0	2026 0	—
Peas, do.	9905 0	7210 5	4503 2
Beans, do.	45688 2	42972 5	15307 1
Maize or Indian Corn, do	116146 5	117485 6	—
Buckwheat	—	—	—
	cwts. qrs. lbs.	cwts. qrs. lbs.	cwts. qrs. lbs.
Flour from British Possessions	71876 2 27	70948 0 4	428 2 23
Flour, foreign	12351 3 16	3460 3 6	13794 1 19

PRICES OF SEEDS.

BRITISH SEEDS.

Cloverseed, red 30s. to 35s.; fine, 35s. to 36s.; white, 30s. to 40s.
Cow Grass (nominal) ..... —s. to —s.
Linseed (per qr.).. sowing 56s. to 60s.; crushing 42s. to 48s.
Linseed Cakes (per 1,000 of 3 lbs. each) £11 10s. to £12 10s.
Trefoil (per cwt.) ..... 15s. to 21s.
Rapeseed, new (per last) ..... £27 to £30
Ditto Cake (per ton) ..... £4 15s. to £5
Mustard (per bushel) white .. 15s. to 18s.; brown, (nominal.)
Turnip, white (per bush.) —s. to —s.; do. Swedish, —s. to —s.
Coriander (per cwt.) ..... 18s. to 25s.
Canary (per qr.) ..... 80s. to 90s.; fine, 90s. to 105s.
Tares, Winter, per bush. ..... 9s. 0d. to 10s. 0d.
Carraway (per cwt.) ..... 28s. to 29s.; new, 31s. to 32s.
Rye Grass (per qr.) ..... 17s. to 38s.

FOREIGN SEEDS, &c.

Clover, red (duty 5s. per cwt.) per cwt. ..... 28s. to 35s.
Ditto, white (duty 5s. per cwt.) per cwt. ..... 22s. to 45s.
Linseed (per qr.) .. Baltic 42s. to 46s.; Odessa, 42s. to 46s.
Linseed Cake (per ton) ..... £8 to £9 10s.
Rape Cake (per ton) ..... £4 15s. 5d.
Coriander (per cwt.) ..... 16s. to 20s.
Hempseed, small, (per qr.) 45s. to 48s., Do. Dutch, 45s. to 47s.
Tares, (per qr.) ..... 30s. to 35s.

HOP MARKET.

BOROUGH, MONDAY, August 28.

The better description of Hops continue to be inquired for at a trifling advance from last week's quotations. From nearly every district of the plantation reports are unfavourable, and the duty has declined to £175,000.

Sussex pockets..... 46s. to 54s.
Weald of Kents ..... 50s. to 56s.
Mid. of East Kents.... 56s. to 112s.

HORTON & HART.

WORCESTER, August 24.—There are most disastrous accounts received this morning from the districts, the plantations having sustained very extensive and serious damage by the gale of wind on Monday last, which, in a few hours, is said to have prostrated thousands of poles, and otherwise battered and bruised the bine to such an extent, that all hopes of there being an average crop grown are quite over; for the duty, which on Saturday was backed at £20,000, is now at £14,000, with no one in favour of that amount. It does not appear that the storm raged with such terrific violence in Kent and Sussex, no reports to that effect having reached us; the plantations there, however, are going on badly, the heavy rains producing mould, and the cold nights preventing the expansion of the blossom into hop. The market is brisk, and prices 3s. higher this week. The duty for the kingdom is estimated at £180,000.—*Worcester Journal.*

BUTTER, CHEESE, BACON, AND HAMS.

	s.	s.		s.	s.
Butter, per cwt.			Cheese, per cwt.		
Dorset	50	to 52	Double Gloucester	60	to 70
Carlow	84	—	Single	46	56
Sligo, 1st	80	84	Cheshire	56	74
Cork, 1st	84	86	Derby	62	66
Waterford	82	—	American	50	54
Limerick	83	—	Edam and Gouda	46	58
Foreign, prime			Bacon, new	78	—
Friesland	98	—	Middle	50	60
Kiel	86	90	Hams, Irish	82	—
Fresh Butter, per doz.,			Westmoreland.	80	84
11s. 0d. to 13s. 0d.			York.	84	90

FLAX.

BELFAST, (Friday last.)—Flax: fine, 60s. to 65s.; good, 56s. to 58s.; good middling, 49s. to 52s.; middling, 40s. to 45s.; coarse, 34s. to 40s. per cwt.

WOOL MARKETS.

BRITISH WOOL.

LEEDS, Aug. 25.—We have no change to report in this branch of business since last week, for although the Bradford stuff manufacturers are exceedingly busy in executing orders for the home trade, they are of a class of goods consisting of almost half cotton and silk. The demand for worsted yarns is as dull as ever, owing to the still unsettled state of affairs on the continent; add to which there is a larger and better assortment of English wool in the market since the clip, as well as a heavy sale of foreign wool at present going on in London; and these several circumstances, combined with the anxiety at present felt as to the result of the harvest and potato crop, conduce to render the consumers extremely cautious, and not to buy except for immediate use.

LIVERPOOL, Aug. 26.

SCOTCH.—We are now receiving a fair supply of laid Wool, which meet a ready sale on arrival, as most of the spinners were out of stock. White Highland is in fair request. There have been several sales of the best class of Cheviots; the inferior is in more limited request.

	s.	d.		s.	d.
Laid Highland Wool, per 24lbs.	6	0	to	6	3
White Highland do	7	9		8	3
Laid Crossed do .. unwashed	7	6		9	0
Do. do... washed	8	6		10	0
Do. Cheviot do... unwashed	8	0		10	6
Do. do... washed	12	0		14	0
White do. do	14	0		18	0

FOREIGN.—The series of public sales of wool commenced in London on the 24th inst., where, as the quantity to be offered is very large, the attention of the trade is now almost entirely directed. So far, it would scarcely be fair to judge; but it is thought the quantity is greater than the trade can take at one period. The business here by private contract has been moderate.

FOREIGN WOOL.

The public sales of colonial and foreign wool commenced on Thursday to a fair attendance; but as the large quantity of 32,000 bales will be offered, it is feared that a good deal will have to be withdrawn, and that prices in the present state of trade will scarcely be maintained. It is yet too early to pronounce an opinion on this head, as the sales will continue for some time.

LEEDS, Aug. 25.—No great amount of business has been done in foreign wools this week, the anxiety to learn how prices are likely to rule at the pending London auctions having tended in a great manner to restrict operations in this market.

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.

THE FARMER'S MAGAZINE.

OCTOBER, 1848.

No. 4.—Vol. XVIII.] [Second Series.

PLATE I.

DEVON BULL.

The subject of our first Plate—a Devon Bull, "Champion," the property of Mr. James Hole, of Knowle House, near Dunster, Somerset—was exhibited at the Meeting of the Royal Agricultural Society of England, held at York, in July last, and obtained the first prize of £40, in the first class, as the best Devon Bull, calved previously to the first day of January, 1846.

"Champion was got by the celebrated bull, bred by Mr. Quartley, of Molland, and exhibited by Messrs. J. S. Bult, of Kingston, and J. Bond, of Heathfield, near Taunton, Somerset, and which obtained the first prize of £30 at the Royal Agricultural Society's show at Bristol, in 1842. In November, 1845, "Champion" won the first prize at the Dunster Agricultural Meeting, being then only two years old, competing with bulls of all ages. In 1846 a prize was awarded to him at the same Society's show, as the best animal in extra stock; and in 1847, at the Taunton Agricultural Show, he won a handsome Silver Punch Bowl, presented to the society by Colonel Tynte, the president of the year, as the best Bull of any age.

PLATE II.

CHEVIOT EWES.

The subject of our plate No. 2 obtained the first prize of 10 sovereigns in the Class of Sheep best adapted to a mountain district, at the Royal Agricultural Society's Meeting, at Newcastle-on-Tyne, in July, 1846. They were the property of Mr. Elliot, of Hindtrope, near Jedburgh.

The Cheviot breed of sheep is from a district in the north of Northumberland, and extending into Scotland, forming the mountains termed Cheviot, the highest summit of which is 2,658 feet above the level of the sea. This district has produced from time immemorial a race of sheep entirely distinct in character from the wild heath breed of the elevated moors adjoining. The Cheviots are destitute of horns in male or female; their faces and legs are white, exceptions occurring in a few cases, in which these parts are dun; the body is very closely covered with wool, which is short, and sufficiently fine for certain cloths. Their natural form is with a light fore-quarter, but this character is removed by breeding, and the modern Cheviots—like those in our plate—are of a good form. The body is longer than is usually the case with Heath sheep. In the low countries, where they are turnip-fed, they are larger than in the more elevated tracts, where artificial food is scarce or wanting. They are exceedingly hardy, their close covering of wool enabling them to resist the extremes of cold. Their wool weighs about three-and-a-half pounds to the fleece, the quality varying with the pastures, being finer where the shorter grasses prevail, and coarser where the herbage is rough and heathy.

Superior feeding has had the effect of enlarging the size of these animals, and increasing the produce of their wool; but the wool becomes less fine, and, since the introduction of the Merino wool of Saxony and Spain, has almost ceased to be used in the manufacture of cloths; it has therefore become more the interest of the breeders to direct attention to the improvement of their form, holding the quality of the wool as a secondary consideration. They readily amalgamate with the Leicesters, and a system of breeding has been in some parts extensively introduced for producing a cross of this descent.

ON THE AUTUMN CLEARING OF STUBBLES PREPARATORY TO TURNIPS.

BY M. M. M.

There are some farmers who erroneously think that the greatest amount of profit on a farm is made by growing *corn*. Hence they make the production of corn a leading feature in their farming, and think themselves especially favoured if their steward will allow them to sow two corn crops in succession, or if their landlord is so lenient as not to restrict them from such a course. They look at so many bushels per acre, be it thirty or even twenty, and reckon it at the six or seven shillings per bushel, and thus jump at the realization of some six to nine pounds per acre as a result—neither calculating the expenses of producing and bringing it to market, nor the deteriorating effect such a "switching" process has upon the land, nor how much it enhances the cost of producing after-crops.

We have often seen farmers stare with astonishment when we have calculated the expense of growing a corn crop; and how they have been amazed when the several outgoings left so little profit. Take, for instance, a wheat crop on a lea, where it requires the least amount of labour, and assume the expenditure on it to be as follows:—

	£	s.	d.
One ploughing and one ribbing	0	10	0
Two harrowings	0	1	0
Rolling	0	1	0
Seed, 3 bushels, at 6s.	0	18	0
Sowing 1s., rolling 1s.	0	2	0
Weeding	0	1	6
Hoeing	0	3	6
Reaping	0	9	0
Leading, stacking, thatching, and getting into barn	0	7	0
Thrashing, 30 bushels, at 5d.	0	12	6
Marketing, returns, &c.	0	11	0
	3	16	6
Take 30 bushels per acre, at 6s., the produce will be worth	9	0	0
Deduct cost, as above, of production	3	16	6
	£5	3	6

This is to set against rent, rates, tithes, taxes, and interest of capital; so that when all these are discharged, it will be seen there will not be any very great amount of clear profit for the farmer, beyond that accruing from any other crop. The profit increases with the quantity of produce, though every increase of a bushel over (say) 30 is not a clear profit of 6s., or whatever may be the price of the corn; for there are greater expenses of harvesting, carrying, marketing, &c.; still, the first deductions are by far the greatest, and the ratio of deduction is much the greatest for the production of the first bushel.

It will, therefore, appear that it is much of a delusion to imagine that profit is obtained mainly by the corn crops, and that green crops are of a secondary consequence. The simple fact that green crops add to the fertility of the soil (at least when consumed upon the land), and therefore produce those bushels of corn from which the fewest deductions have to be made before profit is realized, is quite sufficient to show that green crops, and especially turnips, are a primary, and not a secondary object.

Corn crops in succession have a great tendency to overrun the soil with weeds. In these the clearing and the hoeing can at best be but imperfectly executed, and the friability of the soil encourages especially root weeds; but, as the corn plant, especially wheat, attains generally a considerable height before the weeds are far developed, they make only indifferent progress; and the better the crop of corn, the smaller the crop of weeds. The leaves of the weeds are spread out to breathe in the carbonic acid, to enable them to form their structures; and hence, if the luxuriant wheat is pre-occupying the surface, the lower weeds will, like the cellar inhabitants of a thickly populated town, droop and die, or at least grow stunted and sickly. Hence we find that root weeds, and especially "*couch*," are at harvest time running on the surface. So soon, however, as the corn is cut, and the stimulus of a free access of air is given to them, they begin to send down their tendrils to their legitimate depth in the soil. This arises from that instinctive or sympathetic capability in all plants to tend towards light or air; and hence they are near the surface, where the air is most plentiful, when they are overlopped by the wheat; but begin to contend for the sole possession of the soil so soon as the corn crop is removed. Hence the importance of commencing clearing as soon as possible, because at that period there are fewer weeds to remove, and consequently they are much more easily removed either by carting off, or by incineration.

There is another great advantage in early autumn clearing. If the process is commenced as soon as

the field is cleared, the clearing instrument has a much less depth to go. The shallower the instruments are required to go, the less will be the power necessary to move them. It may be taken as an invariable axiom, that if the depth at harvest time be two inches, it will be five a month afterwards; and if allowed to remain till Martinmas, they will go as deep as there is any friable soil for them to find downwards.

If taken early, a scarifier, executing some eight acres per day, and removing some three inches of surface, may be profitably used; but if late, the plough will be absolutely necessary, and the proportion of soil necessary to be removed, to be dried, and to be pulverized, will be greater in proportion. Thus, if a depth of three inches require the removal of 13,300,250 cubic feet of soil, the removal of six inches would involve the removal of 26,600,500 cubic feet: so that, in an economic point of view, the clearing of stubbles immediately after the harvest is decidedly advantageous.

Then, the removal of this mass in the first instance is not the only process. The draggings, the harrowings, and the subsequent turnings to which we shall afterwards allude, are all extensive or otherwise—are all to do frequently or seldom, exactly in proportion as the first quantity is greater or smaller. But this is not all. The larger weeds become, the greater is the amount of organic or inorganic food of plants of which they rob the soil. Taking the ash of the field scabious, as given by Dr. Hodges, of Belfast, we find its ashes contain—

Potash	46·67
Soda	1·04
Lime	29·40
Magnesia	7·07
Oxide of iron	0·86
Silica and charcoal	13·26
Sulphuric acid	1·90
Phosphoric acid	1·21
Chlorine	3·55

That this is not a singular nor accidental composition is quite evident, from the analysis of all the weeds collected from a turnip soil of an inferior character as regards quality. They gave (*Gard. and Farm. Journal*)—

Potash	3·300
Soda	1·587
Lime	5·828
Magnesia	1·869
Alumina	·002
Oxide of iron and manganese	·487
Chlorine	·802
Sulphuric acid	·587
Phosphoric acid	4·199
Carbonic acid	·030
Charcoal and water	11·704
Silicic acid	19·605
	50·000

To those who are conversant with the composition of the ashes of plants—say of wheat, of oats, of barley, of turnips or of potatoes—the above tables will show that weeds rob the soil precisely of the same materials as the plants need for their nourishment. But it is generally admitted by the best chemists, that the plants of most descriptions abstract the most from the soil the nearer they arrive at maturity. Hence, if the weeds can be arrested in their growth, which they are by the rapid action of the scarifier, the soil is robbed of a much less proportion of its saline elements. Taking a wheat plant: according to Boussingault, it increased in the weight of its mineral constituents between the 19th of May and the 15th of August, 161 kilogrammes, or something like 352 lbs.; so that, if the weeds, many of them closely allied (as the couch, for instance) are subject to the same laws, we shall have an amazing robbery by them. And yet, how very little are these truths reflected upon, and what little effect they appear to produce!

The important question, however, arises, what is the best mode of clearing the stubble? Some parties recommend a thin ploughing; and the writer is not prepared to say that a very effectual clearing of the fallows may not be accomplished by this process; but he has not seen any instrument so effectual on the whole, for the purpose, as is the old-fashioned Uley cultivator. We have seen trials of Finlayson's harrow, and of Biddel's scarifier; but while these two instruments are good in themselves, they seem hardly adapted to scarifying, even when the latter has its scarifying shares; for the weight and ponderosity of the instrument, necessary as it may be to cut up hard and impervious clays, are a great drag when a thin superficial stratum is the whole to be removed. Some objections have been stated to the Uley, on the ground that it covers too little surface for the power requisite to move it, and that an implement covering a wider surface is desirable; and hence there is a variety of all descriptions of skimmers; the principal and most useful of which are Mr. Barratt's, Mr. Busby's, Mr. Barker's, Mr. Smith's, Mr. Coleman's and others, the great desideratum being to prevent the weeds from clogging the tines. For small farmers, we have seen a combination of the Finlayson's harrow and the shares, which may be set at any depth, and which are very useful, as well as saving the great outlay of £9 or £10, which most of the scarifiers cost. The kind of share is of the character indicated below—which is rather an attempt to give an idea of its construction, than to give it to any particular scale.

Herein figure 1 is the tine or share. Figure 2 is the socket for fitting it to the bull of the Finlayson's, in the manner described in figure 3.

A is the socket; B the share; C the grooves in the socket; D, a screw which fixes the share in its socket, by wedging it to the bull E. * The cost of five of these attached to the Finlayson's harrow, will be about £2 or £2 10s.; and they will be found, for small farmers, a substitute.

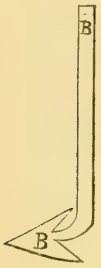


Fig. 1.

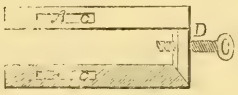


Fig. 2.

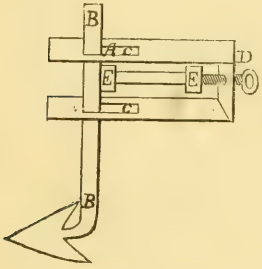


Fig. 3.

The next process is that of harrowing. We prefer Armstrong's zig-zag, or some similarly constructed iron harrows; and the process is begun one or two days after the scarifying, according to the state of the soil and the weather; care being taken not to attempt harrowing until the soil is dry, or more weeds will be covered than are brought to the surface. These must be raked off with as little delay as possible; and if the scarifier has been such as to cut out the whole surface, then a drag will be all that is requisite. Four horses are usually employed in scarifying, and three for the drag. The dragging is usually performed crosswise to the scarifying, and a new set of weeds and stubble are brought to the surface; and this, it will be seen, is the very converse of ploughing, however thinly that process may be performed. The great mass of any weed will be found to have their development near the surface, be it what it may; and if these are thrown down and covered over, several days are lost in returning them to the surface, where alone they are wanted. The scarifier leaves all at least as near the surface as it found it; and thus, all the implements have to accomplish is to shake the earth from the roots, or break the clods in which they may be imbedded.

In all the future operations the Finlayson harrow will be found one of the best clearers. The depth of loose soil being small, the weeds are easily abstracted, and soon brought to the surface, and as easily raked off. Some farmers for want of time, or where labour is scarce, will use the stubble rake. This, while it collects the weeds together, gathers also little clods, soil, and stones; and there is often a considerable expense incurred in collecting the weeds from the rows, and separating them from these materials. As soon as the whole are collected, by two or more dressings, the land is ploughed up as deeply as possible: not less than from 9 to 12 inches should ever be thought of; and if there are obstacles to this, the subsoil plough or the pick ought to be used to remove them.

The question now arises, how far the weeds are to be allowed to decompose, or whether they are to be burnt. With this question are bound up so many inquiries of chemico-vegetable physiology, which cannot be determined until our chemists are decided on the great principles of vegetable nutrition, that, on the whole, we are disposed to reprobate burning the weeds. We are aware that burning does not destroy the inorganic or mineral portions, and that, though incineration may in some measure change their combinations, relations, and affinities, still it leaves them there. But if it be true that manures owe much at least of their value to the ammonia they contain, or in other words to the nitrogen held in their composition, so it must be clear that the fire dissipates this, and sends it into the atmosphere to benefit the neighbours as well as themselves. We must fairly admit that even the breaking down of the organism of the plants by decomposition will liberate a portion; yet still, instead of the affinities holding a portion, the whole is liberated by the fire. Still, this must be received with a certain amount of modification. It is of the utmost importance to get as much done as possible, both with men and horses; and hence the necessity that sometimes arises for getting as much removed, and the land as often worked as possible; and this may sometimes compensate even for the loss of the nitrogen. Still, if there is time, there can be no question that the weeds will amply repay for collection. The green juices are generally sufficient to supply moisture to decompose them; but the mass is greatly improved by drenching well with tank liquid, with gas refuse, or with even horses' dung. A mass by either of these plans is produced, equal perhaps to any manure whatever; and we are disposed to think that it is the best mode of applying liquid

* Balk.

manure, to so absorb it by decaying vegetable matter.

The advantage of autumn clearing, besides giving a farmer power over his land, and the ability to select his season for sowing, is great in allowing it to be still in the spring months, and so germinating all the annual weeds, and these then ploughed in; while the frequent workings of the man who has rested on his oars in the autumn prevents them germinating; and he has the expense of hoeing them out of the turnips. Then, often a crop of turnips depends on the land retaining its moisture in a dry season; and while the autumn cleaner can allow his land to rest and retain its moisture till sowing time, the spring cleaner is wasting his by working, and so losing it by evaporation.

The question of stubble turnips is not entered upon; because, it is quite clear that if two crops of turnips in the four years be taken, the turnips will be a crop of increased difficulty to obtain. Rye, so often sown with advantage for spring feed, depends so much on being in the ground early, that it will not be competent to grow it where autumn clearing is adopted. Still, with all those disadvantages, no farmer who values time and labour, will neglect it. The writer may observe that his Finlayson's harrow was fitted into a scarifier in the mode described by Mr. W. Harwood, of Sowerby.

Sowerby, Thirsk, Sep. 14, 1848.

ON RECENT GEOLOGICAL AIDS TO AGRICULTURE.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

Recent examinations having led to the discovery of considerable masses of native mineral substances, abounding in phosphate of lime, an interest has been excited, in the researches of the geologist, which did not before so generally exist amongst the agriculturists of England.

The progress of these instructive geological labours have been traced with considerable accuracy by Mr. J. M. Paine and Professor Way (Jour. R. A. S., vol. 9. p. 56). They are peculiarly interesting to me, from having many years since invited the farmers' attention to some of these native phosphates. "In the year 1843, Dr. Daubeny undertook a geological expedition to the province of Estremadura in Spain, for the purpose of inspecting a bed of phosphate of lime, which was said to occur in that district; but, concerning which, only the most vague and unsatisfactory information was at that time possessed. Dr. Daubeny's account of this phosphoric bed is in the highest degree interesting (Jour. R. A. S., vol. 5, p. 406). In the purest specimens he found about 37 per cent. of phosphoric acid; a quantity which would be equal to about 76 per cent. of the bone-earth phosphate. More recently the very important discovery was made by Professor Henslow, that certain rounded waterworn nodules, existing in the crag and London clay formations, contained a large per-centage of phosphate of lime. From the form and external markings of these singular concretions, taken with the fact that the teeth of sharks, and other organic remains, were frequently found in the interior of the lumps, Professor Henslow was at that time led to conclude that they were the fossil dung of a former generation of animals, and proposed for them the name of *coprolites*, by which they have since then been known. Further observations, it is true, have induced the discoverer of these fossils to modify, very considerably, the views which he at that time entertained of their origin; but the name is convenient, and will probably be retained. These coprolites, which exist in some parts of Suffolk and Essex in very large quantities, diffused through the crag formation, contain about 50 to 60 per cent. of phosphate of lime. To Professor Henslow then is to be assigned the merit of having first brought before the public the fact of the existence of a stratum containing organic remains in the upper green-sand, remarkably rich in phosphate of lime, which he considered might be found in sufficient abundance to be profitably used as a substitute for bones. The hint thus given by Professor Henslow has not been lost: the collection of this native phosphate of lime, for agricultural purposes, has been since commenced in various parts of the kingdom; and from it considerable quantities of superphosphate of lime have been made. Other and indirect advantages to agriculture will, doubtless, arise from the discovery. The very natural and valuable reflection must occur to the accomplished English farmer, that other fruits of geological inquiry are in all reasonable probability yet to be gathered. It is pretty certain, in tracing, as some little time since I had occasion to do, in another place (Bell's Messenger, No. 2709), a few of the services for a long series of years rendered to agriculture by geology—that what has been hitherto accomplished affords us every assurance that this field is not yet nearly exhausted. It is interesting, too, to notice that as a farmer's son was one of the earliest labourers in geology, so a modern Surrey farmer, Mr. Paine, of Farnham, is

laboriously and successfully employed in the same science. We have here afforded another instance of the good results to be achieved, when practice and science travel hand in hand together. "It is impossible," remarks Mr. Joshua Trimmer (Jour. R. A. S., vol. 7, p. 444), "to enter on an inquiry in which geology is connected with agriculture, without being reminded that we are indebted to the son of an Oxfordshire yeoman for those discoveries which laid the foundation of all our geological knowledge. It was William Smith who ascertained from the English strata, down to the coal measures, that they bore a regular and invariable order of succession, and a general dip towards the east, so that in traversing the island from east to west, we cross the edges of beds which emerge successively from beneath each other, and form bands of various sandstones, clays, and limestones, ranging from SW. to NE. He also ascertained the important fact that each group of strata is characterised by a peculiar group of organic remains, by which it may be identified under doubtful circumstances." These discoveries were prosecuted under great difficulties, and with the sturdy, indomitable spirit of an English yeoman. He completed his great work, the Map of the Strata of England and Wales, alone, almost unknown through a great part of his career, with little aid from private patronage, and no public support. To accomplish this great object he exhausted his slender patrimony, and the profits of a successful professional career; he paid that penalty, as Professor Sedgwick has said, which many men of genius have paid before him, and suffered in his peace and in his fortune, from having outstripped the men of his own time in the progress of discovery. It is not difficult to explain to the intelligent farmer the general arrangement of the strata of the earth. Many modes have been adopted by various authors to simplify the explanation. The best popular description, perhaps, of the position in which the various strata of the earth are placed is that long since given by Mitchell. "This very ingenious writer," says Brande (Outlines, p. 13), "describes the general appearance of the strata, points out their analogies and differences, adverts to their inclination and disturbance in mountainous districts, and to their horizontality in flat countries; and having explained with much minute and practical perspicuity the arrangement of the strata in England, he exemplifies its universal application to the general structure of the globe, and ingeniously represents it in the following manner:—'Let a number of leaves of paper,' he says, 'of several different colours be pasted one on another, then bending them up together into a ridge in the middle, conceive them to be reduced again to a level surface by a plane so passing through them as to cut off all the part that had been raised; let the middle now be again raised a little, and this would be a good general representation of most, if not all, large tracts of mountainous countries, together with the parts adjacent throughout the whole world. From this formation of the earth it will follow, that we ought to meet with the same kinds of earths, stones, and minerals, appearing on the surface in long narrow slips, and lying parallel to the greatest rise of any large ridge of mountains; and so, in fact, we find them.'" (Phil. Trans., 1760). "We have seen," continues Mr. Trimmer, in a succeeding portion of the interesting paper to which I have already referred, "that in the person of William Smith geology was of agricultural origin, and was at an early period of his discoveries applied to agriculture. In the case of William Marshall, one of the earliest writers on the agriculture of Norfolk, we have another proof of the intimate connection between geology and agriculture, since he, who merely undertook to describe the practical details of the Norfolk system of husbandry, was insensibly led into the description of geological phenomena at a time when that science, revelling only in crude speculation, soared above the observation of facts." Of the various soils which are dispersed over the county of Norfolk, "the base of these deposits," adds Mr. Trimmer, "consists of a great sheet of chalks, with an undulating and water-worn surface, which dips under the sea to the southward of east, and rising towards the interior attains its greatest elevation along a line which ranges from Topham Ford, between the sources of the Waveney and the Little Ouse, by Swaffham to Brancaster, and constitutes the watershed of the county, known as the Downs of Norfolk. Beneath the greater portion of the larger area east of this watershed, the after or soft chalk forms the base of the crag and detrital deposits. The outcrop of the strata brings to the surface along the western edge of the watershed the lower beds of hard chalk, provincially called corlk, which is sufficiently hard to be used as a building stone. From beneath this the gault and the representatives of the green sand, the red chalk, and the carstone, successively emerge, and are succeeded by the Kimmeridge clay, which forms the base of the alluvial deposits of the Wash." Placed then amidst such a variety of strata, resting either immediately upon chalk, or close to mixtures of chalk and clay, and having throughout large portions of the county to contend with a deep surface soil of wretched peat, or equally barren blowing sands, we need hardly feel surprised at the success with which the Norfolk farmers have devoted themselves to their permanent improvement. And from their skilful practice the farmer of many a distant district might derive valuable suggestions. In

fact, "there are few soils," as very justly remarks Mr. B. Almack (Jour. R. A. S., vol. 5, p. 309) of so happy a texture as not to admit of improvement by a mixture of some soil; but where the faults are not very glaring, our attention is not so likely to be devoted to their correction, as when we find our onward progress effectually impeded by an evil which must be faced and removed before we can make any good progress. Thus the occupier of the light blowing sand could not, for any long period, avoid observing its glaring defects; and even if he had never heard of a remedy, some chance circumstance would point one out, by placing before him an improvement on a small scale, which, to a careful and shrewd observer, would be a sufficient index of the result to be expected from the trial of the same means to a greater extent.

"In some cases," continues Mr. Almack, in another place, when advocating the extension of the marling or claying system to other agricultural districts, "that which is the most required lies buried under the very soil itself; and I have no hesitation in saying, that the value of many millions sterling is buried in England alone, under what is now comparatively unproductive soil. As an instance, I was shown in Norfolk what a gentleman called 'his hidden jewel,' *so near the surface* that one plunge of his walking-stick convinced me that it would be practicable to bring up sufficient by merely ploughing deeply with the common plough the first time he broke up the land, which he said he intended doing immediately after the tithe rent charge was apportioned. On the surface was light 'fen' to a common observer, apparently of little value; yet immediately below was the valuable slate coloured clay, ready for its improvement. In the fens, near Downham, this clay is from four to six feet below the surface. Pits about six feet by three, and three feet apart, are dug in rows, generally two rows in a chain (of 22 yards), and taking out two or three spits deep from each pit. In digging one pit part of the peat is put in that which was last made. The space between the pits is very necessary. One of the men whom I saw at work appeared, notwithstanding this caution (as well as having a piece of wood to support the sides), to run some risk of being buried by the peat. The cost varied, being under or over 50s. per acre, according to circumstances; but it is *very well repaid* by the crops of red clover, wheat, and beans, which the land will afterwards grow."

On the light sands of Norfolk still more has been in this way accomplished than on the peat soils. We are well acquainted with these sands. It is easy to convey to the farmers of distant localities an idea of an ordinary sandy soil, but it is more difficult to make a stranger imagine a field composed of sand so fine and light as to be blown about by the wind, and thus in very windy weather utterly unable to retain even the young plants of turnips, which we have often seen blown out of the fields of many a Norfolk farm. It is to such soils that the great claying operations of the Norfolk agriculturists have been directed. Mr. Almack gives several instances of these. That of the farm of Mr. Cambridge, of South Runcton, is one instance produced of such good results; but it is correctly enough added, "his farm is selected as a favourable specimen of what has been done for the soil in Norfolk, and to account for its present productive state; but so far from being a solitary instance of such improvements, the practice has been almost universal throughout the county, the quantity of clay applied varying according to circumstances." The farm of Mr. Cambridge, a tenant farmer, consists of 236A. 2R. 25P., divided into 17 enclosures; to these he has applied 54,055 loads of clay, or on an average 188 loads per acre; but the real quantity, however, allowed per acre has varied greatly, according to circumstances; and the amount of course includes repeated clayings to some of the fields. These large quantities, however, are not generally applied. The addition to the soil of from 40 to 80 loads per acre has generally been found to be productive of excellent results. "Near Swaffham," adds Mr. Almack, "I observed some men claying a field from a pit nearly in the centre of it; they were paid at the rate of one halfpenny per barrowful, or seven pence per load; their orders being to apply 80 such loads per acre, making the cost of it under 50s., though the work was done without the use of horses; employment being thus found for more labourers, without fear, too, of injury to the land, by its being cut in using carts when not sufficiently dry." The practice of Mr. F. W. Overman, of Maulden, as described by him (Jour. R. A. S., vol. 3, p. 235), is to put 40 loads of clay per acre upon the sands and gravels, and 70 loads on the moor lands.

We see then that this employment of the different strata of the earth has been long going on (and it was a practice adopted even in Anglo Saxon days, as the old marl-pits of Sussex evince), and the practice has received of late years very considerable aid from the researches of the geologist.

The remark which is sometimes hazarded with so little force, as to the small aid which science in general has afforded to agriculture, we all feel convinced, yearly applies with less force, as fresh triumphs are attained by the philosopher for the farmer's assistance. It is no argument against our seeking the aid of geology that farming has hitherto prospered with little assistance from the science. On this objection, as Mr. W. M'Gillivray remarked

long since (and science has since supported his arguments, by many noble and successful efforts), (Quar. Jour. Agri. vol. 3, p. 209), "It is true that the arts attain a certain degree of perfection independently of scientific or systematic knowledge; that the miner extracted ores from the earth before geology existed as a science; that these ores were resolved into their constituent principles before chemistry had assumed a regular form; and that medicine, agriculture, and other arts essential to human existence, have been more or less successfully practised in all ages; yet a period arrives in every community, where the wants of society increase beyond the supply that could be furnished by an empirical practice of the arts, and then the geologist and the chemist are found useful assistants to the miner, the medical practitioner seeks the aid of collateral knowledge, and agriculture becomes improved by the adaptation of its practice to scientific principles."

AGRICULTURE OF LEWS.

The following interesting paper, not hitherto published, was drawn up by James Smith, Esq., of Deanston, and read lately before the Philosophical Society of Glasgow.

About two years ago I had the honour of laying before this Society some accounts of the island of Lews, and of the condition of its inhabitants.

By the activity of its wealthy and generous proprietor, extensive operations are in motion, which will progressively lead to an improved condition of the people; whilst it is to be hoped that an ample pecuniary reward will result to the proprietor, in addition to the pleasure which will arise to his benevolent feelings, by having promoted industry, and with it the increasing comforts and comparative riches of the people.

Whilst these great changes are going on, it is but justice to the people to record some excellencies in their primitive agriculture, fitted for the peculiar circumstances in which they have been placed—exhibiting an extraordinary acuteness in their observation of natural causes. It is a curious fact, that many of the practices now recommended by the most forward improvers of the present day, as new and important discoveries, have been in universal practice by those islanders from time immemorial.

I shall first speak of their treatment of their cattle and their manure.

In a country so exposed as the Lews is to much rain, and to heavy gales of wind from the Atlantic, and where there are no trees and no mountains to afford shelter, it becomes essential to provide house covering for their cattle in winter, and, at the same time, a constant covering for their manure, so that none of that precious and essential aid to their cultivation may be wasted by the winds and the water which prevail so plentifully. I speak now of the small tenantry, who possess from one to five acres of cropping land, with a wide range of very indifferent moorish pasture. Their houses consist of a rather long, low building, the walls of which are, in some cases, three or four feet thick, composed of stones and turf, to give at once strength, and imperviousness to the wind and rain. The cattle and the people are together in the same apartment, which to those who have been accustomed to a better system of lodging may appear objectionable; but to these people, in their primitive condition, it has many points of convenience and economy to recommend it, although it is to be hoped that in the improvement of their condition the chief points of economy may be retained, whilst their household condition shall be vastly improved.

In this long apartment, the space which is provided for the cattle occupies the greater portion. The earth is taken out to a depth of two or three feet below the level of the surface of the end occupied by the people, and the space serves to contain a large quantity of manure—indeed it holds the whole manure of a year's making, and is exactly upon the principle of the box-feeding system now being recommended by the English agriculturists. The dung is never removed from its site, until it is taken to be put into the ground at seed time; consequently, it is never exposed to the weather, to the winds, and to the rain, until it is deposited in the soil.

The cattle are tied to their respective positions by ropes made of heather, attached to stakes of timber driven into the ground or into the wall; and they are arranged with plenty of room, so that they can move around freely in all directions within the walls. A bed is prepared for them all over the floor, consisting sometimes of turf and broken peat moss, with heather and coarse grass pulled from the moor, and with such straw of the crops as may by casual damage have been rendered unfit to eat as fodder. Layer upon layer of this material is added as may be required, so as to form a clean dry bed as the dung accumulates; and from the freedom of motion allowed to the cattle, their droppings, both liquid and solid, are pretty equally distributed through the body of the litter. The moisture descending through the manure, becomes generally

absorbed—keeping the whole mass moist, which prevents that dry fermentation and rapid change which is so destructive to ordinary dung heaps. All the slops and refuse from the dwelling end of the apartment are likewise thrown into the general receptacle, so that not an atom of the debris of the domestic economy is lost.

The floor of the living division is formed of clay, and being so far above the level of the floor of the cattle portion, is at all times dry. The fire, which is of turf, is placed in the middle of the floor, which keeps the clay floor always warm; and as the clay is a non-conductor, only a small portion of the heat escapes into the earth; whilst it is diffused all around, and affords a comfortable warm circle for the family, however large; and in a country where the people are constantly walking through the wet mossy ground around their dwellings, it affords the immediate means of drying their clothes and warming their bodies.

There is generally an inner room, apart from the living one, in which there are beds for a portion of the family—the gudeman and his wife, with the small bairns, generally sleeping in that portion where the fire is. There is no vent for the escape of the smoke, and consequently there are no drafts around the fire. The roof is so constructed as to permit the smoke to sift through at all parts, so that when fresh fuel has been added to the fire, you see the smoke escaping like steam all over the roof. There is generally an opening at the further end of the cattle portion, so that some part of the smoke finds an escape in that direction, and carries a sheet of warm smoke all along over the cattle, thereby imparting a considerable degree of warmth.

The winter keep for cattle in the Lews is extremely scanty; and it is well known to the scientific agriculturist that external warmth saves food, which is equally palpable by observation to the simple Lewsman, who knowing no language but the Gaelic, in which there is no literature—no magazine of ancient lore, save the traditionary stories of his chiefs—no science—no knowledge of the practical facts constantly arising in this age of improvement—he is left entirely to his own observations, and to the practices gathered from the experience of generations of his ancestors. On all these points the Lewsmen have ready reason for what they do practise. They say that the cattle do not thrive unless they see the fire and smell the smoke.

On the approach of the cholera, in the year 1832, they were compelled to build up walls betwixt their cattle and their domicile; but as soon as the dread of the disease and fled, they pulled down the walls, that the cattle might have the benefit of the fire. We shall yet see, in a more improved system of agriculture in the low country, the application of artificial heat, with a good ventilation for the general warmth of the homestead, substituted for the present destructive mode of obtaining warmth by the pent up atmosphere of a crowded stable or byre—thus taking another leaf from the typeless book of the Lewsman.

There are a few small openings at the bottom of the roof, to admit the poultry and a little day-light, through which a portion of the smoke escapes, when the wind blows on the opposite side of the house. The roof is composed of a scanty portion of timber, to maintain its form and position; and the bulk of the covering is made up of the stubble and roots of the grain crops, laid loosely on, and thatched over similar to a stack. When the crops are reaped, they are generally pulled so as to gather the roots and stubble with the grain; and after it has been fairly winnowed, the roots and stubble are cut off with a knife, to be placed on the roof as I have described. There the straw is subjected to the fumes of the peat fire; and before the summer season, when it is to be used as manure, it is thoroughly impregnated with the different volatile products of the peat combustion, and forms a very valuable manure. The Lewsmen have here anticipated another of the important discoveries of the present time. A patent has just been taken out for an improvement in the purification of gas, where, by the passing of the gas through saw-dust, chopped straw, or other similar material, the gas is purified, whilst the material through which it has been passed is converted into a very valuable manure. In these singular adaptations of natural circumstances by the Lewsmen, we have an example of the openness with which nature divulges to the untutored mind those qualities of matter which are essential to the sustenance and comfort of man; whilst a knowledge of them is only reached, by the man of science, through a long course of varied experiment and laborious induction.

This impregnated manure is seldom dug into the ground, but is generally applied upon the surface, when the plants of potatoes, or grain, have made some advancement; and the rush of growth, after the application, is truly astonishing.

The bulk of the soil of the Lews is deep peat moss; but the cultivated parts have a soil composed of the debris of the granitic rocks, in all conditions and mixtures of gravel, clay, and sand; but so scanty is the available soil, that the cultivation is generally on the lazy-bed system—the trenches, in many instances, occupying nearly as much space as the ridges. The active soil is seldom moved more than four or five inches in depth, and the subsoil is never moved at all; yet on this scanty soil good crops have been raised from time immemorial, with

the simple and never varying rotation of potatoes, bere or bigg, and oats; and there is no more appearance of its exhaustion now, than there was a hundred years ago. Almost the whole of the crop is consumed at home, and the bulk of the debris is carefully kept and returned to the soil, with the addition of the products of the turf fuel, and a portion of the debris of the material gathered by the people, and by the cattle from the vast extent of muirland.

There is one great source of manure which the cultivators near the coast avail themselves of, and that is the sea-weed, which is a vast advantage, as containing elements greedily devoured by the plants. Still, without the peculiar management of their cattle manure, and the debris of their household, with the addition of the peat fuel products, it is not possible that they could maintain the energies of their thin and ill-worked soil, so as to enable them to maintain continuously so large a population on so small an extent of arable ground.

In prosecuting the improvement of the Lews, care will be taken so to engraft the desirable improvements in domestic economy and in agriculture of the more advanced countries, without disturbing the peculiar excellencies at present practised by the natives, whilst they advance in all the essentials of an improved civilization. There is ample room, both in the extent of country and in direct proportion of its unoccupied labour, to afford to every family a comfortable and independent subsistence, and to ward off those starvations which have hitherto periodically visited the regions of the north.

ON A METHOD OF BREAKING UP INFERIOR PASTURE LAND.

BY FRANCIS WOODWARD.

Having been requested by Mr. Pusey to publish the method I have adopted for converting inferior pasture-land into tillage, I feel great pleasure in so doing.

In the commencement of the winter of 1844 there was a very considerable number of labourers out of employ in my neighbourhood, and, having 20 acres of inferior pasture in high ridges (growing rushes in the furrows and moss on the tops of the lands), I thought these might be very profitably converted into tillage, and I adopted the following system:—

I commenced by skimming or paring (on the top of the ridge) the turf about two inches deep with the old-fashioned skim-plough, which left the furrows open, or at least free from turf, ready for draining, which operation I performed *three feet* deep and 27 feet between the drains, at a cost of 70s. per acre, including tiles. I then dug a trench across the ridge four feet wide, throwing the first graft of good soil on one side; I afterwards threw the subsoil from the ridge part of the land into the furrows, making the lands almost level. I then laid the turf (with a fork) bottom upwards upon the subsoil, which had been stirred, and commenced digging a fresh trench, the upper graft of which I placed upon the turf, so that the turf was deposited about nine or ten inches under the surface and between the two grafts of soil.

I allowed the field to remain two years, only working the surface, and grew two crops of wheat from the maiden soil. In the third year I ploughed it very deep, and the turf came up a beautiful rich black vegetable mould, in a fine state to produce two more crops of wheat, making four crops of wheat in succession from a piece of land not worth more than 25s. per acre in its original state. The whole cost was after the rate of *seven pounds ten shillings* per acre; viz. 70s. per acre for draining and 80s. per acre for double digging. I was thus enabled, independent of other advantages, to give employment to 40 labourers for nearly two months in the dead of winter.

In the first year I sowed Red Cluster wheat, broad-cast, the last week in February, at the rate of three bushels per acre. Of course, after double-digging, the land was very hollow. Not having at that time that most valuable implement, Croskill's roller, I had it trod with 24 horses for several days, until it became firm as a road. The produce at harvest was 42 bushels per acre, which I sold at 7s. per bushel, making 14 guineas per acre of the first crop. The second year it produced 50 bushels per acre from 2½ bushels of seed drilled eight inches apart; the third year 48 bushels from 2½ of seed; and it is now planted for the fourth year with wheat, the only manure applied being 2½ cwt. of Peruvian guano per acre. The crop promises to be very good.

I attribute my success to having buried the turf a sufficient depth, so as not to interfere with the grain until properly decomposed, and also to my having had the surface made firm by great pressure, which I think prevented wire-worm and destroyed other insects.

Little Comberton, Pershore, May 30, 1848.

—Journal of the Royal Agricultural Society.

SYSTEMATIC VAGRANCY DEPICTED.

We have to thank the present vigilant and energetic Poor-law Administration for having taken at least the initial step towards grappling with a social evil which, in malignity and formidableness, is scarcely inferior to the Repeal and Chartist seditions combined. In a volume lately presented to Parliament, entitled "Reports and Communications on Vagrancy," and which contains an amount of painfully-interesting matter such as has seldom been condensed within the compass of little more than a hundred pages, we have one of those full-length delineations of a serious and growing public peril, which, in a country like England, is almost invariably preliminary to the adoption of corrective and reformatory measures. Four Poor-law inspectors, one gentleman specially commissioned to conduct a comprehensive and minute investigation into the entire matter, and the authorities of fifty-seven Poor-law unions, in twenty-nine counties of England and Wales, concur in detailing the results of their observation and experience with reference to the above-named subject. We cannot hesitate in characterizing the joint product of their labours, now before us, as one of the most important collections of materials which official industry ever placed at the disposal of the moralist, the economist, and the legislator.

As we intend to take other opportunities of calling public attention to the various phases of this question of vagrancy, we shall at present content ourselves with describing the matter in its general outlines, and with showing, as distinctly as the requisite brevity will permit, the kind of evil against which society has now to contend.

We may say, then, in general, that the system now prevailing in this country, with reference to the relief of the wayfaring poor, turns out, on examination, to be neither more nor less than a direct stimulus and license to habits of unrestrained vagabondism on the part of a very large and a fast-increasing portion of our population. The existence of a supposed legal obligation, binding every board of guardians and relieving officer to provide a night's lodging, with a supper and breakfast, for any and every person who may demand such accommodation, is rapidly converting union workhouses into a sort of *pauper hotels*, which stand in precisely the same relation to the wants of the mendicant class of travellers, that hotels of another description do to those of the rest of the community—the only material peculiarity in the arrangement being, that the mendicants are privileged travellers, who take their tours *gratis*. "Their general practice," as one of the inspectors informs us, "is to receive all tramps and wayfaring poor into certain wards detached from the main body of the workhouse, in which they are usually supplied with clean straw and a covering of rugs or blankets, and with a supper and breakfast of bread and cheese: they apply for admission, for the most part, at a late hour, and on the following morning, when able, they proceed on their way without further inquiry." In other words, society in this country, at this moment, offers to the beggar, the vagabond, and the tramp (whether English or Irish), the right of living at free quarters on industrious people's earnings—that right being, practically speaking, and in the vast majority of cases, absolutely unqualified by any conditions that can render its assertion distasteful.

Of the mode in which this extraordinary privilege is exercised by that worst class of professional nomads, for whose special benefit it would almost seem to have been expressly intended, we proceed to give the reader some idea. We have only to premise, that the very few passages of the Report, which our limits will allow of our extracting, are but the merest specimens of an immense mass of evidence, all bearing in the same direction. Mr. G. Grenville Pigott, for example, after enumerating eleven workhouses which, within the space of six months, had received 22,102 of these travellers—proceeds as follows:—

"For the most part, these vagrants are the refuse of society; *spending the day in idleness, begging, plunder, and prostitution, and repairing at night to the workhouse on their route, or where they expect the best treatment*, instead of to the low lodging-houses to which they used to resort; they thus traverse the country in every direction, to the great prejudice of the industrious poor; this system of relief affording great encouragement to sturdy beggars and vagabonds, who prefer a life of idleness and vice to honest industry. There can be little doubt, that *as the certainty of obtaining a night's lodging and food gratuitously has become more generally known amongst this class*, coupled with the entire absence of any effectual inquiry into their habits or course of life, *their resort to workhouses has greatly increased, and will no doubt continue to do so.*

For these people appear, by all accounts, to be an

amazingly shrewd and quick-witted race. They pick up knowledge fast. They do not travel at a venture, but carefully inform themselves beforehand how the land lies. Before going "*a-union-ing*"—such being, we are told, their cant phrase for a summer's ramble from workhouse to workhouse—they take the same pains to learn all particulars respecting the accommodations on their intented route, which a continental tourist is accustomed to bestow on the study of his "Murray." Another inspector (Sir John Walsham) gives us a curious case in point. After speaking of the "great and increasing numbers" of vagrants that he has found on the main lines of road in his district, and saying that "everywhere these casual wayfarers exhibit the same idle, turbulent, and filthy habits which characterize the lowest dregs of society; and everywhere, likewise, *their especial aversion seems to be work*," this gentleman adds:—

It is remarkable *with what telegraphic despatch the whole corps of tramps become acquainted with any altered circumstances bearing upon their relations with particular unions.* In the North Witchford union, for example, it happened that two months ago the stock of junk for oakum picking was exhausted, and the guardians, not then appreciating sufficiently the necessity of enforcing the provisions of 5 and 6 Vict., c. 57, s. 5, delayed to authorize the master of the Doddington workhouse to procure a fresh supply. In the very next week the number of vagrants, which had for some time previously averaged about 20 per week, increased to 45, in the second week to 57, in the third week to 75, and then, oakum-picking having been resumed, the number as readily decreased till it reached the usual average."

The reader must not, however, infer from this, that the exaction of work, as a condition of relief, is by any means a reliable check on the audacity of these depredators. The experiment of a labour test has been repeatedly tried, under a great variety of circumstances, but it very generally breaks down—in the worst cases, invariably. There is scarcely any point of the whole question on which the evidence so nearly approaches absolute unanimity, as on the practical impossibility of effectually applying this test—especially in those extreme cases in which a test is most needed. Not only is it usually impracticable to organize the machinery of superintendence requisite for ensuring the due performance of task-work by hordes of irregular and refractory visitants, but the affair requires an amount of downright physical force, which very few workhouses can be expected to keep constantly at hand. Even where the means of coercion are within reach, it does not necessarily follow that a satisfactory result is obtained; for, when the worst comes to the worst, imprisonment is all that the recalcitrant tramp has to dread, and the alternative is not, in all respects, a disagreeable one. Let us hear Sir John Walsham on this point:—

"I yesterday inquired at Stow union workhouse about the disturbances which had lately taken place among the vagrants relieved in that establishment. It seems, they now make a point of refusing to work (the work at Stow workhouse consists in picking 1lb. of oakum in four hours), and usually accompany such refusal by breaking the windows of their room, and burning the oakum in the fire supplied to them. For this misconduct *they always assign as a reason the wish to lay up for a fortnight during the winter, in gaol.*"

Mr. Boase's observation has led him to the same conclusion:—

"The difficulty of enforcing work is so generally felt, that *a strong feeling appears to possess the magistracy against punishing tramps at all for a simple refusal to work;* so that now, when the tramp's object is to get into prison, he accompanies his refusal to work with breaking windows, or some other act of violence. At Aylesbury workhouse, the master says, 'We adopted the labour test about nine months ago. I fancied it checked them for the time; numbers, however, continued to increase, and *the expense of punishing those refusing became so heavy, that the guardians have ordered its discontinuance,* which has been complied with since 17th May last.'"

In fact, the gaol, in the estimation of this tribe, is simply another string to their bow. Gaol and workhouse have each their advantages. The liberal fare and handsome accommodation of the one—the ease and freedom of the other—are both excellent in their several ways. It is a mere question of town and country life. Each is good in its season, and both are best. Sir John Walsham places this matter in a strikingly clear light:—

"It is now, I apprehend, *becoming a system with the vagrants to pass away the cold months by fortnightly halts in different gaols.* I have no doubt that the men who have just been sent to Ipswich from Stow Union will, as soon as their fourteen days have expired, make their way to Blything or Wangford Union houses, and commit the same depredation there, in order to be sent to Beccles gaol; from thence they will proceed to Yarmouth, and so on.

"*In the summer months vagrancy is a pleasanter occupation, and then they find the workhouses such convenient lodging-houses or hotels, that they behave*

better: nevertheless, work is their especial aversion. They are often found, at all times of the year, destroying whatever they can in all union houses where work is required. I feel almost convinced that this estimable fraternity have bound themselves by a vow always to resist, even to being committed to prison, the prescribed task of work."

Thus, any sort of labour-test that can be devised presupposes, as the first condition of its efficacy, a severer and more penal system of prison discipline. Almost the only word of hope that we find in these pages, on the subject of tests of destitution, consists in the praise somewhat dubiously bestowed, by certain boards of guardians, on what we may call the soap-and-water-test. The Rochford guardians, for instance, make an invariable rule of *washing* their vagrants and "purifying their clothes"—"which is an arrangement," we are told, "*peculiarly distasteful to them.*" It appears, however, to work well; for the guardians are enabled to report, "vagrants not numerous."

To the above prefatory and incomplete sketch of the nature of this modern Hunnish invasion on civilized society, we will only add now one or two statistical illustrations of its rate of progress. Mr. Pigott, for example, gives us a tabular comparison of the vagrants relieved, during corresponding half-yearly periods of the years 1846 and 1847, in the workhouses of seventy-two unions. The numbers stand thus:—

ENGLISH.		IRISH.	
1846.	1847.	1846.	1847
16,135.	32,683.	2,009.	11,548.

The following summary, furnished by "unions and places, under local acts," is yet more terribly significant, as exhibiting the average of a wider range of facts:—

Average number relieved in one night in 603 unions, &c., in the week ending December 20, 1845	1,791
Average number relieved in one night in 603 unions, &c., in the week ending December 19, 1846	2,224
Average number relieved in one night in 596 unions, &c., in the week ending December 18, 1847	4,508
Total number relieved, whether in or out of workhouse, in 626 unions, &c., on the 25th of March, 1848	16,086

Reserving for future occasions all further illustrations of the nature and growth of this frightful evil, and deferring, likewise, the consideration of the remedies that have hitherto been suggested, we will only add, that the world has yet to see a Government sufficiently powerful, and a people sufficiently wealthy, to exist permanently under such a burden as we have now described. If England presumes on her ability to perform the usual functions of social and political life, with such a cancer as this preying on her vitals, she has small reason for looking disdainfully on the theories of the Luxembourg and the practices of the *ateliers nationaux*.—Chronicle.

TO THE ADVOCATES FOR TENANT-RIGHT.

GENTLEMEN,—Although the report of the committee which lately sat on this question is not all we could wish, I am delighted to find that the minutes of evidence on which that report is supposed to be based are highly favourable to its progression; so much so indeed, that although a large portion of the witnesses examined were selected as opponents to the measure, there was not one who, on cross examination, could deny the propriety of giving tenants security for the judicious outlay of capital in temporary as well as permanent improvements. These facts bring forcibly to my mind the great obligations the tenant farmers of England are under to the talented Editor of the *Mark Lane Express*, not only for introducing this question to the public, but for the manly, able, and determined support he has given it on all occasions. Whenever mistaken or selfish motives have exhibited a desire to perpetuate the ascendancy of might over right, or attempted to get rid of the question of security by a side wind, who has nobly stepped forward in its defence, while other journalists were tacitly awaiting the public verdict on the question? *The Editor of the Mark Lane Express!* Has he not, through evil report and good report, spread the force, the justice, and the righteousness of this claim, through the length and breadth of the land? I should be sorry to be officious, but I feel confident that many of my brother farmers would feel pleasure in subscribing half a guinea each toward the purchase of a piece of plate as a memento of their gratitude to the patriotic Editor, for the invaluable aid he has rendered to a cause to which a large portion of the mighty of the land are opposed. I will merely add that I have no wish to dictate in this matter; but should the proposition be approved of, I will aid to the utmost of my power in this county any method that may be considered best calculated to accomplish the end in view.—I am, gentlemen, in great haste, yours very obediently, EDWARD CARTER HUGHES.

Belle Vue, near Hythe, Kent.

We have just seen the Act of Parliament for preventing the extension of disease amongst cattle, and are glad to find that the following important clauses, recommended by the Committee of the London Farmers' Club, and respecting which Mr. W. F. Hobbs waited upon Mr. Labouchere, has been introduced.

"Be it enacted, that if any person turn out, keep, or depasture any sheep or lambs infected with or labouring under the said disorder, in or upon any forest, chace, wood, moor, marsh, heath, common, waste land, open field, road-side, or other undivided or uninclosed land, such person shall, on conviction thereof, forfeit and pay any sum not exceeding £20."

MEAT FROM AUSTRALIA.

The papers lately received from Sydney devote a considerable portion of their space to the subject of a better outlet for the increasing stock of the colony, which now far exceeds their home wants, and it is therefore important that they should find a market for the surplus. One party had commenced preserving meats for the London market; and a paper observes that "considerable shipments of preserved meats, soups, &c., are preparing for England. Mr. Josephs, who lately introduced the last improvements of English invention and machinery, is about to make a very extensive trial in the London markets, and, from the favourable samples that have been shown in Sydney, with every prospect of success." And preparations were being made at Newcastle for establishing a manufactory on a most extensive scale. A large wooden building was being erected on the west side of the town, in which was to be placed some machinery recently brought out from England; the establishment to be under the management of a gentleman who has had experience in one of the London houses, and who went out on purpose to superintend the Newcastle concern. It is said the London market is principally looked to for the future trade of the new establishment.

The colonists at Port Philip, who some time since commenced the salting and preserving of fresh colonial meats, are prosecuting the trade with great energy. The papers refer with much gratification to the introduction of their produce in this shape some time back to the London market, by Captain Williams, of the Alice Maud, a notice of which appeared at the time. The *Port Philip Gazette*, in referring to the occasion, observes:—

"The beef was in as good condition as when first shipped, and those present pronounced it to be of a quality greatly superior to either Hamburgh or American beef; and yet it was taken home in a wool ship. With regard to the Australian wine drank upon the occasion, it was said to be as good as hock sold in London under a good brand. Thus the matter, which is one of the deepest importance to all of us, was pro minently brought under the notice of the British public. For this Captain Williams deserves the grateful thanks of every class of the community, and we trust that those more immediately connected with the trade will take the matter into their serious consideration, and, notwithstanding their numerous discouragements, give it another fair trial, which will be the best compliment they can pay to Captain Williams. The subject is one deserving of attention, and we trust that our stockholders and merchants will exert their best energies to provide a supply of good beef for the home market. Were the trade once fairly established, the benefits it would confer upon this country would be incalculable, not speaking of those which would accrue to the mother country, which would be undoubtedly great."

The Adelaide papers likewise devote much space to the same subject. The colonists are so superabundantly stocked, that the increase of the flocks and herds which already belong to them demands a diligent inquiry for the means of outlet, in the form of tallow, and provisions salt-cured, or preserved by the scientific process now so very successfully applied in England, on the continent of Europe, in the metropolis of New South Wales, and elsewhere.

"The exportation of salted beef from the Australian colonies has hitherto been attended by many failures; but occasional attempts have been sufficiently encouraging to give assurance of general success whenever the judicious choice of season, the adoption of an improved and unvarying process, with the use of good salt and undeniable packages shall have done all that is possible to obviate failure.

"The preservation of animal food by the scientific process we deem to be of great importance in a country and climate like this. It is highly desirable that the practice should be adopted on commercial grounds, namely, for the supply of distant markets, where animal food is indifferent in quality and very expensive; as also for the use of the shipping which victual here for continuation or return voyages, or those whalers and others which call in for refreshment. It is also desirable, that the process should be adopted and made available for the local consumption, especially during the hot months, when it is so difficult to obtain the well-conditioned flesh of animals, or fish, in sufficient variety for domestic use, without incurring enormous waste in proportion to the quantity actually consumed. In Sydney colonial diligence and enterprise are practising and fostering the process we speak of in a way to leave no doubt of a large measure of success.

"Thus we may see that full ground of encouragement exists for similar attempts in Adelaide; and we are sure that many of our fellow citizens and fellow-colonists will rejoice with us whenever we have the pleasure to announce the able origination of such an undertaking in this city or neighbourhood. By the preserving process our domestic establishments and houses of entertainment might be kept fully supplied with every variety of flesh, fish, and fowl, at any season of the year, when the natural sources of supply are unavailable. In New South Wales and Van Diemen's Land the preserving of fruits is very extensively practised, and as we have sugar quite as cheap as in the neighbouring colonies, we shall be glad to record more local advances in the same useful and delectable branch of economic industry."

The boiling-down establishment of Messrs. Wark and Elder, at the Port, had been completed. It is said the vats or pots for boiling down are eleven in number. Ten are capable of holding twenty-five to twenty-six sheep each, and the eleventh about sixty sheep. The floors are bricked, and every precaution taken to prevent fire, even should the pots, through inattention, be suffered to boil over. At the western end of the building is a substantial slaughter-house, over which a platform is erected, from which a harpooner will strike the bullocks as they enter at the doorway. The building is erected of colonial timber, with which material the whole is en-

closed. At the eastern end, and contiguous to the building, is a large well, from which water is pumped immediately into the pots. Altogether, the establishment is considered one of the most complete in the Australian colonies.

BRITISH NAVIGATION LAWS.

We copy the following interesting article from the *New York Journal of Commerce*. It is on a subject of importance to the grain-producing districts of this country:—

"The operation of the existing laws of Great Britain (restricting the carrying trade of the St. Lawrence to British vessels) upon the interests of Canada is severely felt. Those disasters which have heretofore seemed impending are no longer altogether a matter of apprehension. Quebec, and especially Montreal, to which the merchants of the whole western portion of the provinces formerly resorted, are now comparatively dull. The cause is evident to every intelligent citizen. While colonial products were given the preference in the British market, the Canadians did not complain of the monopoly in favour of British shipping, sustained by the present odious navigation laws, as the protecting duties generally enabled them to overlook the disadvantages of having the United States closed to them by duties levied (25 cents per bushel upon wheat) for the protection of native productions, and also of being obliged to employ British vessels at exorbitant rates, and of such inferiority as to occasion damage to their cargoes, estimated at 5 per cent. on an average on the shipments of produce from Canada.

"But now the Canadian farmer, being deprived of all protection for his produce in the English market, and still subjected to a hostile discriminating duty in the guise of a law for the protection of navigation, is unable to compete with American freights; and the consequence is, that the rates on the St. Lawrence are such as to drive the trade from the Canadian waters to the canals and ports of the United States, till probably by far the greater portion of the exportable produce of Western Canada has been diverted from its accustomed channel, and the importing ships going to Montreal are without their usual cargoes.

"If the product of the extreme North-western country of the United States could be transported to the sea more cheaply through Canada than through the American territory, doubtless the Canadian route would be preferred, and the Canadian canal would engross a large portion of the carrying trade of the north-western states. But if, on the other hand, the advantages of the internal navigation of the St. Lawrence, &c., are more than counterbalanced by the rate of freight from Quebec and Montreal—which is the case—the whole matter is at once resolved into a question of mere cheapness of transport from Quebec and Montreal, or from New York; and of course, while the disparity continues as it now exists, the latter route will be preferred. Taking the average of the last four years, the cheapness of freights will be found very much in favour of New York over Montreal. The freight on a barrel of flour from these places respectively, to Liverpool, in these years, may be stated as follows:—

	Montreal.		New York.	
1844	4s.	0d.	1s.	8d.
1845	4	8	2	0
1846	5	1½	2	6½
1847	6	0	2	0
Average	5	0	2	0

Showing an advantage to New York of 3s. sterling per bbl., or 1s. 6d. per barrel, after deducting the advantages enjoyed by Canada of internal navigation, quite sufficient to turn the whole export trade from the former channel, and readily accounts for the results experienced. Thus the trade continues to be drawn away from Canadian waters to our own by an unnatural and apparently unjust monopoly; and there is no peaceable method of remedying the evil, except by the repeal of the existing laws by the Imperial Cabinet, and that body has postponed the subject to another year.

"This condition of things is aggravated by the fact that the colony has long directed its efforts, with commendable energy, to the improvement of the St. Lawrence, from Lake Erie to Quebec, with the design to place it in a state of efficiency and cheapness which would render it preferable to any communication through the States. Not far from 12,260,000 dollars has been thus expended, a large portion of which has become a crushing debt, without any immediate prospect of alleviation. Relying on the tolls arising from the canals for the remuneration of the public treasury for this great expenditure, they had hoped gradually to discharge all obligations, but only in the case of the Welland canal, which has been thrown open to the Americans, has this expectation been realized. Under these circumstances, the removal of the restrictions imposed by the navigation-laws is regarded with solicitude, both in Canada and in the mother country. The latter is apprehensive lest in case of their removal, a commercial union of an intimate character should be formed between "the States" and the colony, from which evil consequences might result; and the former cannot long remain passive under laws which she cannot reconcile to her sense of right."

TERRIBLE HAILSTORM IN FRANCE.—A hailstorm of extraordinary violence, and of a character to leave behind it long and lamentable recollections, occurred on the 14th of August in the district of Andelys and Louviers (Eure), in France. We should have been horrified with the loss which this storm would have occasioned if it had come fifteen days sooner, when the corn was standing. The violence of the storm was so great that it did immense damage to the corn, which was cut, but not carried. On the same day considerable damage was done to the crops in the district of Compiegne (Oise), and Soissons (Aisne). Happily, the farmers in these districts, who occupy large farms, are almost all insured. These are not the only losses which have been experienced this season. The districts of Blois and Vendôme (Loire et Cher), Dreux (Eure et Loire), Yvetot, Rouen, and Dieppe (Seine Inferieur), have suffered severely by storms which occurred on the 3rd and 15th of July, and which did dreadful damage. Fortunately the occupiers in that part of the country, which is very subject to these visitations, taught by experience, had, generally speaking, protected themselves by insurance. It is when calamities such as these befall persons, that they learn how to appreciate the advantage of mutual protection; which causes misfortunes, which must involve the total ruin of individuals, to fall lightly when distributed over a great portion of the kingdom, and borne by a large number of persons.—*L'Echo Agricole.*

SOILS—THEIR CONSTITUENT ELEMENTS.

That the reader may form some definite idea respecting the composition of soils, and of the practical value of correct chemical analysis, we select the following table from Sprengel, who stands high as an authority in all subjects connected with agricultural chemistry. In a thousand parts of dry soil there were found of—

	No. 1.	No. 2.	No. 3.
Organic matter....	97	50	40
Silica	648	833	778
Alumina.....	57	51	91
Lime	59	18	4
Magnesia	8½	8	1
Oxide of iron.....	61	30	81
Oxide of manganese	1	3	½
Potash	2	trace	trace
Soda	4	do.	do.
Ammonia	trace	do.	do.
Chlorine.....	2	do.	do.
Sulphuric acid	2	¾	do.
Phosphoric acid ..	4½	1¾	do.
Carbonic acid	40	4½	do.
Loss	14	0	4½
	1000	1000	1000

Now, this table is very interesting and instructive to the inquiring farmer. He learns from the analysis which it contains that the several substances to which we have already referred enter more or less into all fertile soils, and, consequently, that the unproductiveness of any particular soil must be owing to the want of some of these ingredients, in their proper porportions, or to the presence of some deleterious matters—such, for example, as an excess of the salts of iron. That this knowledge of the nature and composition of soils, when based upon accurate analysis, is not more curious than it is practically useful, we shall now proceed to prove. It is almost unnecessary to remark that no improving farmer will close his eyes against whatever light may approach him that will afford him clearer and more satisfactory views of the composition and capabilities of that which occupies his every-day thoughts, and upon which he and all creatures depend for subsistence—the soil he cultivates. In reference to the preceding table, Sprengel observes that the soil of No. 1 was amongst the highest in the scale of natural fertility, and had yielded heavy crops for sixty years without the application of manure. The second was below the average of the district in point of productiveness, nevertheless yielding good crops by judicious manuring. The third was all but sterile, affording scarcely any produce; but by the means of superior culture and manure might be made comparatively productive. Now, let us just take a glance at the contents of this table, and we cannot fail to learn something that will throw considerable light on the arcana of farming. The amount of organic matters, or that which gives peculiar richness to a soil, it will be seen, is more than double in No. 1 than No. 3, while the latter contains a greater quantity both of silica and alumina. Take lime, another important substance in estimating the capabilities of soils, and it will be seen that, while No. 1 has no less than 59 parts of that material out of every thousand, No. 2 has but 18 parts, and No. 3 only four parts. This indicates great dissimilarity. Again, let us turn to potash and soda, two very essential ingredients in all fertile soils, and it will be seen that, while No. 1 possesses 2 and 4 parts respectively, Nos. 2 and 3 contain of these valuable salts only a mere trace. And, if we look to chlorine and sulphuric and phosphoric acids, it will be seen that No. 1 contains an appreciable portion of them all; No. 2 a much less quantity, while No. 3 affords only a trace of their presence. It is of importance to remark that in the most sterile soils what is commonly wanting are salts and phosphates. The foregoing will amply repay the closest investigation of the practical farmer, and will show him what important aid analytical chemistry can extend to his pursuits. Who can impartially look at these investigations without perceiving a greater beauty, a clearer reason, and the means of a more certain control over the various operations of the farm? Sprengel informs us, in reference to the second of these soils, that with good culture and manure it produced heavy crops of clover, turnips, and potatoes, particularly with the application of gypsum—a substance in which it will be perceived, by referring to the table, the soil was very deficient. For instance, how remarkably great is the difference between lime and sulphuric acid in No. 1 and No. 2! Now, the remedy in this case of No. 2 appears obvious, viz., the application of gypsum, which is a sulphate of lime, that is, sulphuric acid combined with lime; this manure being in both the materials, of which the soil is deficient. Agricultural chemistry affords numerous instances of a similar kind; and how much safer and more profitable is it for the practical farmer to be guided by the unerring principles of science in all his proceedings, than to depend merely on mere guesses or haphazard experiments! —Pharmaceutical times.

OBSERVATIONS ON THE IMPLEMENTS OF AGRICULTURAL TILLAGE; AND A DESCRIPTION OF AN IMPROVED IMPLEMENT, BY WHICH THE OPERATION OF TILLAGE MAY BE EFFICIENTLY PERFORMED, AT A GREAT SAVING OF LABOUR, TIME, AND EXPENSE.

BY JOHN EWART, LAND-SURVEYOR, ETC., NEWCASTLE-UPON-TYNE.

An indispensable preliminary in estimating the efficiency of any instrument is a careful examination of what is sought to be effectuated by its operation; as it is only by comparing the effect produced with the object in design that we can with certainty pronounce upon the extent of its usefulness.

The operation of preparing the ground for the growth of cultivated plants is what is intended to be understood in the subsequent observations by the term "tillage," by which three objects are sought to be attained: first, reversing the surface of the soil; secondly, dividing its mass so as to present the greatest number of particles to the contact of air and moisture, or rendering the earth operated upon capable of ready absorption of these elements; and thirdly, to remove whatever spontaneous vegetation may be present, that the soil may not be exhausted of nutritive principles required to promote the growth of plants designed to be cultivated.

The purposes above mentioned are, perhaps, as perfectly accomplished by the operation of the spade as can be desired; but an insurmountable obstacle to the use of that implement in tillage on an agricultural scale arises from the difficulty of the requisite number of labourers to prepare a sufficient space of ground for the reception of any crop in due season. And supposing a sufficiency of workmen to be procurable that might be required at one season, the difficulty, or rather impossibility, of finding them with profitable employment during the remainder of the year will confine the use of the spade to the tillage of horticulture, or of very limited extents of ground, in the production of agricultural crops.

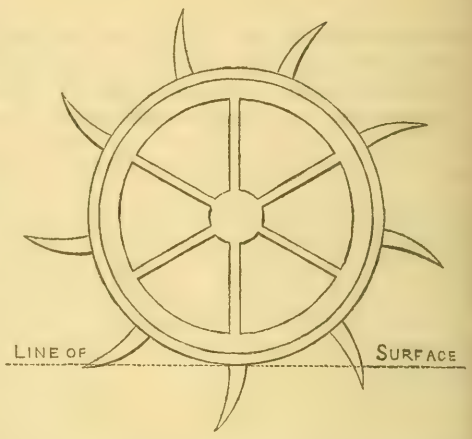
In reviewing the different implements in use in agricultural tillage as to the extent to which each is adapted to accomplish the purpose intended, and commencing the notices with the plough, it will be found, on very slight examination, that the capability of that implement is confined to the first of the objects of tillage previously named—the turning or reversing the surface of the soil. In doing which, when it lays the furrow-slice in a proper position without waste of power by undue resistance in passing through the soil, it is all that can be looked for in an implement of the kind. In the performance of its office in the best manner of which the implement is capable, the tillage operation of the plough, limited as it is, is very imperfect in effect; as it not only compresses, but by its sliding action it also smoothes the surface by filling up the interstices between the particles wherever any part of the implement comes in contact with the soil; thus rendering all descriptions less capable of absorbing, and that of a clayey nature almost impervious to air and moisture, especially when the latter mentioned kind is in any degree approaching to a state of wetness. So that in the ordinary mode of agricultural tillage, by the compression and glazing, as it were, of the subsoil by the action of the sole of the plough, the pasture of plants is limited in depth to the depth to which the plough acts, and it requires the mass of the furrow to be pulverized by the action of other implements before the stirred earth (especially clayey soils) is capable of saturation with air and moisture—a condition of the soil, independent of all others, indispensable to vigorous vegetation.

The implements of agricultural tillage designed for cleaning and pulverizing the land are the harrow in various modification of form, and the roller, with either a plane, spiked, or notched, surface. Most, or perhaps all of the implements just referred to, are efficient in the purposes they are designed to accomplish. The simple harrow, with its straight teeth, is only capable of—as in fact it is all that it is intended to accomplish—stirring the earth in a horizontal direction. Many of the modifications of the harrow, such as Finlayson's patent self-cleansing harrow, Ducie's drag, Biddell's scarifier, &c., are adapted for a more extensive operation; for they not only stir the earth in a similar manner to the common harrow, but also at the same time bring weeds and clods from the depth to which they act to the surface, so that the former may be gathered by the harrow or rake, and the latter crushed by the action of the roller. Of implements of the roller kind having plane surfaces there is nothing in regard to them requiring notice, except that those formed of hollow cast-iron cylinders in two sepa-

rate parts in their length are the best; and of those having spiked or notched surfaces, Crosskill's patent clod-crusher is the most effective in its operation of any that has hitherto been invented. Yet on clayey land, when in a state of any degree of toughness, the action of this implement kneads and moulds the particles of the clods into lumps about the size of hens' eggs, still more compact than the masses it has broken, so as to require, in frequent cases, after its use, the action of a smooth-surface roller to produce a tilth of soil sufficiently comminuted for the reception of turnip or other small seed. The defect pointed out in this very excellent implement may perhaps be easily rectified by some trifling alteration in the arrangement of the points, as the evil seems to arise in a great measure from the points being too closely set.

The economy in the use of improved cleaning and pulverizing implements is very great, as by it repeated ploughings—the most expensive and tedious of all tillage operations in agriculture—may be dispensed with, or, at any rate, become less required. In illustration of what has just been advanced, it may be instanced that in the working of a fallow with the common straight-toothed harrow and the plane-surface roller, it is necessary, from the operation of the common harrow being limited to the mere gathering and raking together of the weeds brought to the surface in ploughing, to plough so often as any foulness remains in the soil. Pulverization of coarse clayey land being chiefly effected by the crushing action of the roller, the process of cleaning is quite as efficaciously performed by the use of the improved implements previously mentioned as by the plough, and at a saving of time, labour, and cost, in proportion as the breadth of land covered by the breadth of such implement exceeds the breadth of the furrow turned by the plough. Were an implement to be used combining a simultaneous action of cultivator, and roller without much increase of power being required, labour and time would be thereby still further economised in the operation of agricultural tillage.

The advantages spoken of would probably result from the use of a roller formed of separate wheels, having rims about four inches wide, revolving independently on a round common axle, the peripheries of such wheels being furnished with curved coulters, of a length suitable to the depth of surface-soil in which the implement is intended to work—say from six to seven inches. Twelve wheels of the above mentioned breadth would form a roller four feet long, of which a diameter of twenty-four to thirty inches would be commodious in point of size. The diagram below represents a vertical section of the working parts of the implement above described.



The operation of the implement described above will be as follows:—Whilst the rims of the wheels act as a powerful plane surface roller in crushing the clods, the curved coulters stir the earth to admit air, and, at the same time, bring to the surface all weeds and clods there may be throughout the depth of tilled soil, the former to be gathered by a horse-rake, and the latter to be reduced by a subsequent operation of the implement.*

Of all descriptions, soil of a clayey nature is that in which the use of the revolving cultivator will be attended with the greatest and most important advantage, as may be understood from the observations to follow in suggesting a mode of tillage by means of that implement, which mode of cultivation will render the occupation of clay land farms, especially, much more advantageous, by the saving of both time and labour, than the practice usually pursued.

In describing the mode of tillage referred to, the land is supposed to be previously thorough drained, when the following will be the process to be pursued:—The division of the land, which, according to the course of cropping adopted, falls in course

* The principle of the revolving cultivator was suggested to the writer by Mr. Joseph Laycock, of Lintz Hall, in the county of Durham, who has already adopted it in combination with a horse-hoe, with the most unqualified success in stirring and pulverizing the soil, and at the same time throwing the weeds severed by the hoe to the surface. The revolving principle was also applied upwards of a year since by Mr. Anthony Hall, of Prudhoe, Northumberland, to a subsoiling implement possessing advantages over any other that has hitherto been invented, and which, with some trifling modifications, will be every thing that can be desired for the purpose.

to be fallowed, must be thoroughly and cleanly ploughed in autumn, with furrow slices so disposed as to expose the greatest possible surface to atmospheric influence.* Having ploughed as directed above, the land must remain untouched throughout winter until spring; during which season, and when perfectly dry, it must be repeatedly worked by the revolving implement, so often as any foulness or coarseness may remain. After each working, the land must be gone over with a light harrow, or, what is better, a horse-rake, for the purpose of gathering the weeds. The land by the means just mentioned will be perfectly cleaned and pulverised without being touched by the plough during spring.

In the mode of tillage herein recommended, "Greg's System of Managing Heavy and Wet Lands without Summer Fallow," promulgated during the existence of the Board of Agriculture upwards of thirty-five years since, will not fail to be recognised. Such being the case, it will be unnecessary herein to dilate on the advantages to be derived from the practice of such a system of tillage; and to those who may be desirous to enter into a particular comparison of it, and the usual mode of tillage, it will be sufficient to refer them to Mr. Greg's pamphlet on the subject, or to the Library of Useful Knowledge—"British Husbandry," vol. II, page 66, in which last mentioned work, an abstract of, and commentary on Mr. Greg's system will be found. The only additional observation which it appears necessary to make on the subject of the present paper is, that whatever may have been the advantages of the system referred to by means of implements already in use, such advantages will be greatly increased by the use of the revolving cultivator herein treated of; and that the rapidly increasing application of scientific knowledge to the practice of agriculture will banish summer fallowing from every system of husbandry on all descriptions of arable land, and substitute a green vegetable crop as equally conducive to the cleaning of the soil, and which in itself, whilst yielding a profitable return in the production of beef, will also be the means, by raising an abundant supply of farm-yard manure, of the progressive melioration of the soil, and of increasing its power of production of grain.

Newcastle-upon-Tyne, Aug. 1.

* In order to fulfil this condition, the proportion of the breadth of the furrow slice to its depth should be as ten to seven:—*e. g.*, a furrow seven inches deep should be ten inches wide, six inches deep should be rather more than eight and-a-half inches wide, five inches deep should be about seven inches wide, and so on.

THE SMALL-POX IN SHEEP.

The disease among sheep, called "variola ovis," is not at present prevalent in Flanders, nor has it been for many years; when it does occur, it is treated according to the system pointed out by Professor A. Numann, of the Veterinary College of Utrecht, in his work on the diseases of animals. The following is a translation of the article on small pox among sheep:—

"The small-pox is to be ascribed to contagion only; it sometimes spreads quickly over the whole flock, as also over other flocks of the neighbourhood; at other times the contagion is slow; in winter, when sheep are penned up, they become more liable to the disease than in summer, when separated from each other in the open air. This disease has two characters, benign and malignant. The benign small-pox shows itself usually on those parts which are not covered with wool; the pustules stand separate, ripen and dry up; before they show themselves, the sheep in general exhibit an inclination to lie down, and a loss of appetite—this till the pox appears, which is generally on the third day.

"The malignant pox is more dangerous; it is, however, not so frequent; the symptoms by which you may know the malignant pox is, that the sheep stand so close to each other that they run against each other, which occasions a great festering, which spreads and destroys a great part of the hide; it is an unfavourable symptom when the sheep appears uncommonly tired, lets its head hang down, or remains lying on the ground from weakness, and has entirely lost its appetite, and a thick matter runs from its nose; all these symptoms become stronger as the complaint increases, and it often happens that the sheep dies between the tenth and twelfth day.

"When the sheep eat freely, and appear playful, while the pox comes out regularly, breaks and dries up, no medicine is requisite; but should they lose their appetite, show and inclination to lie down, the heart beating quick and strong, and the pox not make its appearance on the third day, then nature requires assistance to drive the disease outwards; to this effect the following remedy is necessary—

"Take two ounces of juniper berries, pulverized; a root of parsely cut, and split peas reduced to a powder, two handfuls each: boil all this in four pounds of water; clear it off, mix in it one-eighth of an ounce of camphor, which has been previously dissolved in the yolk of an egg, and an ounce of good wine vinegar: this mixture to be divided in eight parts, one part to be administered night and morning till the pox is forced out. To obtain this point, the following remedy will also be found efficacious—

"Take flour of brimstone, three-eighths of an ounce; juniper berries, to be pulverized, the camphor mixed with the yolk of an egg, and the whole mixed with four ounces of honey: to be divided in eight parts, one part to be given night and morning.

"The stable in which the sheep are kept should be dry and airy, and not too warm; they ought to have fine sweet hay, with barley-straw cut very fine, which may be mixed with wheat-bran moistened, bruised barley, or flour of rice; a little salt to be mixed daily with it.

"When the pox is thrown out without containing any matter, the first given remedy is to be applied, and a seton to be set in the chest and each loin, which is to be effected in the following manner—

"Shear off the wool to the size of a hand's breadth from the part where you wish to place the seton; cut two small holes, the one above the other, through the hide, at a distance of three fingers; loosen the communication between one incision and the other by means of a flat stick; then draw through the opening a piece of linen half a finger's breadth, of which that part that goes under the hide must be besmeared on both sides with butter; the next day draw the band a little, and besmear it afresh; take care that the band be long enough to enable you to tie it, to prevent its slipping out. On the fifth or sixth day, when the pock is charged with matter, the linen or band may be drawn, and the above remedy dispensed with.

"When the blood is not freed from pock matter, it often produces (when the pox is already cured) a swelling in one or other part of the body; as soon as such swelling is come to maturity, it ought to be opened, and the matter washed away quickly. If the eyes should be closed with a swelling they must be often bathed with water, and when opened the matter carefully washed away. The following remedies may be applied in cases of malignant small-pox. The pustules seldom burst without assistance, but the matter they contain spreading continually, they ought to be opened with a sharp-pointed knife as soon as they are in a state of maturity; and after squeezing out the matter, to be washed with a solution of salt and water till a cure is performed.

"As the small-pox is very contagious, it is necessary to guard against it as much as possible, and when discovered to separate the sheep affected from the rest of the flock, and place them in another stable, which ought to be fumigated with juniper berries twice a day at least; the manure taken out, and fresh straw put in daily; besides, the stable must (after the complaint has subsided) be scoured with a solution of wood-ashes, and then fumigated with chlorine, before it is made use of to receive sound sheep.

"In summer, sheep affected with the small-pox may be driven in fine weather for a few hours, morning and evening, in the field, but care must be taken they do not go near the sound ones; the latter must not go into the field where the former have grazed: in general, all communication, of whatever nature it may be, between the sick and sound sheep must be avoided, and the shepherd who conducts and has care of the sick sheep should take care not to approach the sound sheep, lest he should communicate the contagion. It is said that if healthy sheep were to be fed with barley-straw, it would prevent them from catching the infection. It is further necessary to observe strictly whatever is prescribed by the law: that no sheep belonging to a place or flock where the small-pox rages be permitted to be conveyed to any other place; such removal of sheep or lambs that have been inoculated may, however, take place, if it be certain they have not the natural small-pox.

"The best means to diminish, as much as possible, the effects of the small-pox is inoculation, as from experience it has been confirmed to us, that out of 100 sheep that have been inoculated, there die scarcely three or four, which are very few in comparison with the number of those which are carried off by the natural small-pox—often two out of three. It is therefore advisable, as soon as the disease breaks out among the flock or in the neighbourhood, to inoculate the sound sheep; this is easily done, in the following manner: Take from a sheep which has the small-pox matter which is still liquid, as that which is already thickened has but little effect, or produces small-pox of a very malignant character; the sheep to be inoculated to be laid on the table; an assistant takes hold of both its hind legs, and one fore leg; the person who performs the operation takes hold with his left hand of the other leg, and takes with a lancet, or needle commonly made use of on such occasions, a little sheep-pock matter, and introduces it through the upper hide of the under part of the leg which is not covered with wool. It is better to do this operation in three or four places, that one may ensure its taking. Inoculating under the tail is attended with good effect, the pock therefrom being less exposed."

DISEASED SHEEP.

The following paragraph appeared in the reports of Smithfield market on Monday, Aug. 28, as given in the agricultural papers :—

"The Government Inspector, Mr. Simonds, having seized 500 foreign sheep, owing to their being diseased, the supply of that stock from abroad in to-day's market was comparatively small, yet the general demand was far from active. The sheep referred to have been sent into the Essex marshes."

Five hundred diseased sheep are sent to the Essex marshes, to spread infection through the country. If Mr. Simonds possessed authority to seize the animals, he surely had power to consign them to some place of safe keeping, from whence infection could not spread. It is essentially necessary that the individuals selected to perform the duties of inspectors of infected animals should be invested with ample powers and be persons of experience, judgment, and discretion. The following letter, which appears in *The Veterinarian* just published, is important, from the well-known talent and ability of the writer, Mr. Henderson :—

"Sir,—In looking into the last number of 'The Veterinarian,' my attention has been drawn to an extract from *The Times* parliamentary reports, referring to inquiries made by Mr. Bagge, Mr. W. Milnes, and Mr. Henley, respecting the importation of *diseased* sheep. Mr. Labouchere, in reply, stated that he *believed* that skilful veterinary surgeons were employed to inspect the importations into the port of London, and that he also *believed* it was the same in all other ports.

"It must be evident to every one, that the greatest possible attention should be directed towards so important a subject as the health of animals destined for the food of man, so that an animal suffering under any disease which would make it unfit for food should not be allowed to enter the markets. Now, it is very well known to professional men that an animal may have a disease of a virulent nature lurking within it, one perfectly apparent to an experienced professional eye, though no strongly-marked outward signs may be visible.

"It is therefore clear that none but properly educated and experienced veterinary surgeons should be chosen, and that the appointment of such persons should be approved of by a much more competent authority than a Custom-house officer. By such a plan, respectable veterinary surgeons really qualified would readily be found, who, for their own reputation's sake, would not allow any infected animal to pass them, and hence there would be a much less number of diseased animals admitted.

"It appears from the same report that but very few sheep, on landing in the port of London, have shown outward symptoms of disease ; but other reports state that many foreign sheep have been affected by the disease *after* their arrival in England."

Mr. Ernes, another writer in the same periodical, speaking of the importation of diseased animals says—

"Had proper inspectors been appointed this would soon have proved effectual, since no one would have been found to run the risk of carrying a cargo of diseased sheep ; and the more so, because in all parts of the continental markets places are set apart for affected animals ; and it is the want of such regulation existing in this country that, I am convinced, induces parties to send us our supplies from diseased markets, instead of from others."

The place set apart by us for diseased animals is —as it seems—*the Essex marshes.*

CATTLE SHOW IN BELGIUM.

Sir,—Allow me to express through the medium of your widely-circulated journal my sincere thanks to the burgomaster and other gentlemen at Dixmude (a small market town, situated about twelve miles' distance from Ostend, Belgium), for the kind reception shown to me on Sunday last at their cattle show ; more especially have I to thank Mr. Charles Van Woumen, member of the Chamber of Deputies ; Mr. John de Grave, member of the Provincial States ; and Mr. Polydore Van Severen, grazier and landed proprietor, for their attention and the information they procured me.

I was much gratified at the stock exhibited, especially of the short-horned breed ; many being of excellent quality. The prize for the fattest ox was awarded to Messrs. Van Hille Brothers, of Dixmude ; and wh h was sold for 30 guineas. The prize for the best fat co.. was given to Mr. Polydore Van Severen, also of Dixmude ; and sold for 20 guineas. The prize for the best heifer to Mr. John De Grave, demolder of Shriveken's Kerke ; and this gentleman, who has devoted much time and been at great expense to advance agriculture, has been rewarded for his services by his Majesty the King of Belgium with the cross of honour. And the prize for the best bull was awarded to Mr. David Maes, of St. Jacob's Capelle. The young stock exhibited was of superior quality and great promise. The show of pigs was large ; but might be greatly improved by mixture of English breeds. And highly gratified was I to find the same plan followed up as in this country—that of rewarding old and faithful servants. There was one 78 years of age, whose services extended over a period of 61 years.

In passing through the country I was much pleased to see the general good appearance of the farming.

After these prizes had been awarded, we sat down to an excellent dinner ; where 150 of the most influential inhabitants, burgomasters, and farmers of the adjacent villages did ample justice, and the evening was spent in the greatest conviviality.

I remain, Mr. Editor,
Your very obedient servant,
Robert Rickman, Jun.

Blandford, August 30.

—Mark Lane Express.

REPEAL OF THE MALT TAX.

The humble petition of the Association for the purpose of obtaining the Repeal of the Malt Tax, and consisting of a president, vice-presidents, committee, and members, assembled, after being duly convened, at their rooms in Bridge-street, Blackfriars, in the city of London,

Sheweth,

That in the year one thousand eight hundred and twenty-nine, and for a long preceding period, several duties were and had been levied, under the authority of your honourable House upon malt and beer; and that the produce of these several duties respectively was, as nearly as may be, the same in amount, viz., three millions five hundred thousand pounds.

That in the year above-named strong representations were made (as on former occasions also) by your petitioners and others, of the injurious effects of the duty on malt, and its repeal was earnestly prayed for; and that, for the readier supply of the labouring population, and at a cheaper rate, it was further prayed that beer, not to be drunk on the premises, might be legally retailed at the shops of grocers and others, as are various other objects of general consumption.

That in the same year the Government of that day, refusing the boon so earnestly prayed for by your petitioners and others, repealed the duty on beer, which not a single individual had ever thought of asking for, and adopted the system of licensing beer-shops, which has proved in its results to be one of the greatest evils ever inflicted on the country, and more injurious to the morals of the community than any other measure that can be named.

That from the course pursued by the Government at the period alluded to arises the necessity now imposed upon your petitioners of again pressing their prayer for the repeal of the duty on malt on the attention of your honourable house, and of again insisting on the injuries which it inflicts upon them and upon the community at large; and this after the lapse of twenty years of oppressive burthen, chequered only by the disappointment of hope reasonably founded and repeatedly excited.

Your petitioners therefore, strong in the justice of the cause which they advocate, and sensibly alive to the evils which they endure, are bold in submitting the following allegations against the duty on malt, all of which they are prepared to substantiate, if permitted so to do, by incontrovertible evidence, at the bar of your honourable House.

Firstly, then. Your petitioners allege that this duty is enormous in amount, inasmuch as it exceeds on an average five pounds upon every acre of barley used for malting, and this outweighs all the charges of rent, tithe, rates, and culture taken together; and although it has been said repeatedly that this duty is paid by the consumer, yet does it operate most prejudicially to the producer, both by narrowing the demand, and by rendering barley of an inferior quality, which will not bear the duty, comparatively valueless.

Secondly. That this duty is a positive discouragement to the best system of cultivation; inasmuch as its immediate effect is to diminish the breadth of barley culture, whereas the barley districts are universally admitted to be the best cultivated and the most productive in the kingdom.

Thirdly. That this duty arbitrarily prohibits the farmer from making the most of his produce, inasmuch as he is debarred from the process of malting his grain; whereas the fact is now generally admitted that corn and pulse of every kind used for the fattening of cattle derives a great additional value from this process; hence also a heavy loss is inflicted on the public at large, by shortening the supply and enhancing the price of meat.

Fourthly. That this duty is pre-eminently unjust and oppressive, inasmuch as it levies a heavy tribute on the produce of our own fields, whilst the foreigner, comparatively untaxed, and with many other advantages over the British farmer, is allowed to import his corn duty free.

Fifthly. That this duty is most impolitic and unwise, inasmuch as it interferes greatly with the employment of our redundant population, and thus tends to augment the feeling of discontent already too general, and this, not only as it affects the culture of barley, but of our hop grounds, woodlands, waste lands, and every branch of industry connected with agriculture.

Sixthly. That this duty is odious and cruel, inasmuch as it is highly injurious to the health of the whole industrious population, and this by placing beer beyond the reach of the labourer in districts pregnant with malaria, generating ague and low fever, by holding out a strong temptation to the public brewer to substitute deleterious ingredients for pure malt, and by encouraging the consumption of ardent spirits; hence all that is heard of sanitary laws, wash-houses, and baths appears little else than mockery so long as this duty is allowed to remain in force.

Seventhly. That this duty is profligate and immoral, inasmuch as it is directly opposed to the cultivation of domestic habits amongst our labouring population, debars them from the innocent enjoyment of family association, chases away the husband from his own fireside to the beer shop, and drives the neglected wife to the gin palace, or, worse still, to opium, as a resource: thus do we see blasted in their very bud, even in the bosoms of our families, the seeds of religion and morality which the school room and the pulpit are engaged in sowing.

Eighthly. That this duty precludes all chance of progress in the art of malting, inasmuch as by the stringency of legal enactments it restrains the maltster from all new experiments, and pins him down to the same

uniform course with all grain, however varying in quality.

Ninthly. That this duty is the greatest imaginary encouragement to extensive monopoly, nay, its only support, at a time when public opinion has been loudly expressed against monopolies of every kind, thus confining within one great channel the waters which would otherwise be distributed into fertilizing streams throughout the whole land.

Your petitioners humbly submit, in conclusion, that no impost has ever been levied in the worst of times, and in the most ill-governed communities, against which so many and so grave allegations could be urged with any regard to truth; and on this ground your petitioners earnestly implore your honourable House to devise the means of relieving them and the public generally once and for ever from this insufferable charge.

And your petitioners, as in duty bound, will ever pray, &c. WILLIAM PHILLIPS LAMB,
Chairman of the Meeting.

THE DUTY ON BRICKS.

SIR,—As the extent to which bricks, *duty free*, can be legally used for the purpose of drainage of lands is not generally known, I send, for your information, copy of certain queries which I submitted in the year 1835, for the consideration of the Board of Excise, with the answer of their solicitor thereto. The subject being important to the interests of agriculture, you may perhaps consider it worthy of insertion in your valuable journal.

I am, sir, your obedient servant,
JOHN HIGGINS.

Alford, Lincolnshire, August 26.

QUERIES REFERRED TO ABOVE.

1st. Whether bricks (duty free) can be legally applied in building sea gowts, sluices, dams, culverts under roads and rivers, gate tunnels, and such other edifices as are exclusively appurtenant to, and necessary for, works of sewers?

2ndly. Whether they cannot be legally used in the construction and re-building of bridges, crossing over public drains, in cases where the renewal of the bridge is rendered necessary by the enlargement or improvement of the drain?

The following answer was received from the Board, through Mr. Browne, the secretary:—

By 7 G. 4, c. 49, s. 3, it is enacted, That it shall be lawful for any person or persons to make tiles or bricks for the sole purpose of draining wet or marshy land, without being charged or chargeable with any duty, for or in respect of such tiles or bricks; provided that all such tiles or bricks shall be stamped or moulded by the person or persons making the same, with the word "drain" in or near the centre of one of the surfaces of such tile or brick, in so plain and distinct a manner that the same may be easily and distinctly legible to any officer of excise or other person examining the same, both before and after such tiles or bricks shall have gone through the process of burning, and become fit for use: and if any person or persons making such tiles or bricks as aforesaid, or any other person or persons shall sell or deliver, use or employ, any such tiles or bricks so stamped or moulded as aforesaid for any other purpose than that of draining wet or marshy land, he, she, or they, for every such offence, shall forfeit and lose the sum of fifty pounds; such penalty to be recovered and applied as any other penalty incurred under any act or acts of parliament relating to the duties of excise.

The words of the clause will be seen to be very extensive; and being a remedial act, extensive as they are, they are to be liberally construed. On this principle the words, "for the sole purpose of draining wet or marshy lands," in my opinion authorize the use of these bricks in the construction of all such works as are necessary for rendering the drainage effectual; amongst these would be the works enumerated—sea gowts, sluices, dams, culverts under roads and rivers, gate tunnels, &c.; whatever work of this description is necessary for effecting or preserving the drainage, in the construction of it these bricks may lawfully be used. The collector has referred to one of the main drains being made applicable to purposes of navigation: the question in this case would be, Are the bricks used in any works which are to improve the navigation of this sluice, or are they used for the preserving it as a drain? In the former case the bricks must be duty paid; in the latter, drainage bricks may be used. The question as to the bridges is more doubtful, but this distinction seems to me proper to be made: if, by widening a drain, a bridge is required to be taken down and rebuilt, and it is done by those who are effecting the drainage there, in the re-construction of it duty-free bricks may be used; but in any other repair of the bridge by the county or parish, the bricks used must be duty paid. With respect to rivers, I understand Mr. Higgins to allude to culverts under them; if any sluices in the river banks, or in any drains, are constructed for purposes of irrigation in dry weather, and not for the purpose of draining or carrying off water from the lands, it will not be legal to use the drainage bricks in the construction of such works. Mr. Higgins should be informed that if the bricks are sold or applied for any other purposes than of the drainage, a penalty of £50 is incurred.

Excise Office, February 18, 1835.

HAILSTORMS.—On Thursday se'nnight a very heavy hail-storm passed over the Lodge farm, in the occupation of Mr. Peter Cowell, damaging 23½ acres of barley to the amount of one quarter per acre average. Mr. Cowell is insured. The storm passed over some adjoining lands belonging to persons who were incautiously uninsured. On Tuesday week a hail-storm occurred at Ickleton and Elmdon, damaging six acres of oats upon the Grange farm, Ickleton, belonging to Mr. S. A. Wilson, to the amount of 12 bushels per acre; and on the same day, three acres of oats, upon Mr. George Clark's farm, at Elmdon, to the amount of six bushels per acre. Both these gentlemen were also insured. Fortunately harvest was nearly completed, or a great amount of damage would have been done. The following persons also suffered from the same storm: C. C. Edward, of Wilton, and Mr. E. Nash, of Pentico, near Ramsbury, in Wiltshire, and Mr. J. M. W. Harris, and William Wing, Esq., of Steeple Aston, in Oxfordshire; fortunately they were insured in the Royal Farmers' Hail-storm Insurance Office. A few days previously Mr. Richmond, of Wymoning, near Portsea, Hants, and Mr. Smith, of Coleshill, near Farringdon, Berks, suffered from another hailstorm; but they were also insured in the same office. Several parties in the immediate neighbourhood of the above were also injured, but unfortunately were not insured.

TENANT-RIGHT COMMITTEE.

It is not improbable that some of our readers may have construed our long silence upon the subject of tenant-right into an abandonment of the question; we therefore embrace the first fitting opportunity of stating that such is not the fact. Whilst the Committee of the House of Commons "On Agricultural Customs" was sitting, we deemed it in all respects most fitting and respectful in us to abstain from offering any comments upon the subject. We never entertained the notion that the report of such a committee would be favourable to legislation, nor were we particularly anxious upon that point. When we published the report a short time since, we gave the names of the Committee, but, we believe, not correctly. We therefore repeat them, together with certain alterations made after the first appointment :—

Mr. Pusey, Berkshire, Chairman.
Mr. Newdegate, Warwickshire.
Mr. Stafford, Northamptonshire.
Mr. Evelyn Denison, Malton, Yorkshire.
Mr. Tatton Egerton, Cheshire.
The Earl of Arundel and Surrey, Sussex.
Mr. Henley, Oxfordshire.
Mr. Hayter, Wells, Somerset.
Mr. Bouverie Renfrew.
Sir C. Lemon, Cornwall.
Mr. W. Miles, Somerset.
Mr. Colville, Derbyshire.
Mr. Burroughes, East Norfolk.
Mr. H. Drummond, West Surrey.
Sir J. Trollope, Lincolnshire.

The following changes were afterwards made :—
Mr. Moody, Somerset, took the place of Mr. W. Miles, and Mr. Sotheron, North Wilts, took the place of Mr. Drummond.

The Committee was appointed "to inquire into the law and custom of different parts of England and Wales as between out-going and incoming tenants, and also as between landlord and tenant, in reference to unexhausted improvements or deterioration of land and premises occupied for agricultural purposes." They were empowered to report their opinion, and minutes of evidence taken before them, to the House.

We availed ourselves of the earliest possible moment to place the report in the hands of our readers, and we lose no time in announcing the publication of the evidence which is now before us, and which we venture to designate as a volume, the contents of which will be productive of a more rapid advance of agricultural improvement, of more advantage to the agricultural interest both landlord and tenant, and of more substantial benefit to the nation at large, than any which has ever emanated from a similar source. We purpose giving from time to time portions of the evidence; but that will not suffice as a means of communicating the invaluable information which is contained in the volume in question—it should be diffused as widely and as speedily as possible. If the landowner desires to learn how he may best improve the value of his property, let him carefully peruse this volume of evidence. If the tenant farmer, now crippled and clogged by the want of that security which must be the precursor of any immediate outlay on his part, with the view to future advantage, would learn what might be his position did he but enjoy that species of protection for his capital which some of his more fortunate brother-farmers possess, let him read and well weigh the contents of this volume, and resolve to co-operate zealously with those who advocate the just principle of "tenant-right." The season is rapidly advancing when the various Farmers' Clubs throughout the kingdom will resume their meetings. The volume of evidence to which we call attention contains nothing of a political character. The question of "tenant-right," like that of practical agriculture, is one which men of all political parties may entertain and discuss. The county of Lincoln affords the best confirmation of the truth of this remark, the principle being adopted in that county by Whigs and Tories, Liberals and Conservatives, Protectionists and Anti-Protectionists. This volume containing the whole of the evidence costs but 5s. 6d., and can be procured free of carriage by ordering it through any bookseller who obtains goods from town.

We would strongly urge every Farmers' Club to purchase immediately three copies, and circulate them amongst such of the members as may not possess themselves of the book, so that the information thus collected may be diffused as widely as possible. The names of the witnesses examined are—

J. Stewart, Esq., barrister-at-law.
Mr. W. Hesseltine, land agent, Worlaby.
Mr. T. C. Beasley, land agent, Harston, near Grantham, Lincolnshire.
Mr. C. Stokes, farmer, South Notts.
C. W. Hoskins, Esq., barrister-at-law.
E. W. Wilmott, gentleman, Etwall, Derbyshire.
R. B. Harvey, farmer, Harleston, Norfolk.

J. G. Cooper, farmer, Blythborough, Southwold, Suffolk.
S. Jonas, farmer, Ickleton, Cambridgeshire.
W. Bennett, land agent, Lewsey, Beds.
W. Hutley, farmer, Witham, Essex.
R. C. Chawner, land agent, Litchfield, Staffordshire.
H. C. Lattimore, farmer, Wheathamsted, Herts.
E. Page, land agent, Beverley, East Riding, Yorkshire.
J. Outhwaite, land agent, Catterick Bridge, North Riding, Yorkshire.
H. White, land agent, Warrington, Lancashire.
H. Kersey, land agent, Suffolk.
W. Shaw, farmer, Coton End, Northamptonshire.
G. H. Ramsay, Esq., landed proprietor and farmer, Durham.
G. Kilby, farmer, Queeniborough, Leicestershire.
B. Hatch, farmer, Tenterden, Kent.
R. Beman, farmer, Stow-on-the-Wold, Glouc.
J. Houghton, land agent, Sunning Hill, Berks.
T. Owen, farmer, Clapton, Berks.
E. C. Hughes, farmer, Hythe, Kent.
J. Chrisp, land agent, Newcastle, Northumberland.
G. Turner, farmer, Barton, near Exeter, Devon.
J. Smith, land agent, Rye, Sussex.
G. Harriott, farmer, Basingstoke, Hants.
T. Chandler, farmer, Warminster, Wilts.
H. Blandford, farmer, Poulshot, Wilts.
T. Swinnerton, farmer, Caldicott, Warwickshire.
J. H. Waterson, farmer, Dorchester, Dorset.
T. Carpenter, farmer, Chipping Norton, Oxfordshire.
H. Higgins, gentleman, Bynsop Court, Herefordshire.
S. Mogg, farmer, Bathpool, Somerset.
F. Woodward, farmer, Little Comberton, Worc.
H. Trethewy, land agent, Silsoe, Beds.
J. Darby, farmer, Martock, Somerset.
W. Barnes, land agent, Staplehurst, Kent.
W. Pinchus, Esq., farmer, Wenlock, Shropshire.
J. J. Rowley, farmer, Mansfield, Derbyshire.
S. Gibbons, farmer, Isle of Wight.
T. Boniface, farmer, Arundel, Sussex.
Major F. Brown, gentleman, Lincolnshire.
Rev. C. Neville, clergyman, Nottinghamshire.
J. Parkinson, land agent, Leyfields, Newark, Notts.
W. Smith, land agent, West Rasen, Lincolnshire.
G. Legard, land agent, East Riding, Yorkshire.
W. Loft, farmer, Trusthorpe, Lincolnshire.
G. German, land agent, Derbyshire.
R. Clutton, solicitor, Reigate, Surrey.

—Mark Lane Express.

TENANT-RIGHT.

Sir,—I consider that the tenant farmers owe to you a debt of gratitude, as you have at all times so strenuously advocated their interests, and allowed in the columns of your *Express* the free admission of communications on the discussion of that important subject—*Tenant-Right;* although I have every reason to believe that it would have met with a more favourable reception under a different title, as I fear there are many landed proprietors who deny that the tenant farmers have any right, except that of being subservient, forgetful that it is the tenants who find the *capital to cultivate their land.* However, although at present they may entertain such ideas, they will find in this improving age that such views must be annihilated, and not only that the tenants will become enlightened as to the importance of the subject when they engage to take land, but the landlords also will be convinced that their interests are reciprocal; the one finding land, and the other capital and skill for its cultivation.

These are important truths, and no doubt will have due weight on the cultivators of the land, and which have been freely discussed at various farmers' clubs and agricultural meetings.

It will henceforth be found that the farmers are no longer that tame class of beings to allow their coats to be taken off their backs, like the harmless sheep, before they would complain, which I heard Lord Brougham once remark in the House of Commons, in drawing a contrast with the tradesman, comparing them to an animal: "if you only touch one of their bristles they would cry out."

Since that period circumstances have altered their position; and as it is evident they will have all the world to compete with, practical experience convinces them that it will be impossible to do so, unless they have every impediment removed, and encouragement held out to them by ample security, in order that they may be enabled to cultivate the land with a high hand.

The repeated advantages which have been taken in ejecting tenants by a six-months' notice, have taught them a lesson; and cases have been known, although I am pleased to state not very frequent, of even selling their property, when invested in land, by tender—a sort of dark auction. I know a case in point, of great injustice, in which the tenant had occupied the farm upwards of 30 years: it was in a high state of cultivation, in consequence of a considerable sum being expended by the tenant in improvements in draining, &c., &c.; indeed, so great was the advantage taken of the tenant, in the estimation of the agent, who would not lend himself to such unjust proceedings, that he gave up the agency greatly to his credit; but, sad to relate, this tenant, a worthy character, only survived the shock two years: although he had a fair share of this world's goods, he never recovered the advantage taken of his invested property. Indeed, I have been employed in several cases in which great advantages have been taken of the occupiers when the land had been in a high state of cultivation, and the out-going tenant compelled to leave it without a fair remuneration.

Viewing all these circumstances collectively, few will be found willing to risk their capital on such an uncertain tenure, and be in jeopardy at the end of any alternate six months.

I have always considered the great landed proprietors of this country as a liberal body, not wishing to exact more than a fair rent for their land, to which they are

justly entitled. With such impressions I am at a loss to conjecture what can induce them to oppose a measure of giving security, fraught with such extensive benefit to themselves, and in which *justice, peace, and plenty* are united. Surely, it must be admitted (if an appeal is made to reason), an act of *justice*, that if the tenant improves the estate, he is entitled to a just remuneration for such improvement, which would not only be the means as a natural consequence of promoting a mutual feeling between the landlord and tenant; but it would also promote *peace* and contentment amongst the labourers by giving them an increased demand for the only property which they have to dispose of for their support. Indeed, I am so sanguine, that if an equitable law was universally established, securing the property of the *tenant farmer*, that it would open such a field for the display of agricultural zeal, that *plenty* would be the result of both food and labour; and although the agricultural labourer would be the first to partake of the benefit, if the subject is viewed on the principle of reciprocity, the advantages that would result are almost incalculable, as the increase of wealth produced from the land by the application of capital would not only enrich those more immediately connected with the land, but would, of necessity, be circulated through the various branches of trade, manufacture, and commerce; consequently, to a certain extent, all classes of her Majesty's subjects would partake of the benefit. It may therefore be considered a national question of the first magnitude for the consideration of the legislature; and if the landed proprietors, with such facts before them, are still determined not to listen to the voice of *reason*, they must submit to the consequences; and instead of the land being made by superior cultivation to produce sufficient to supply the demands of an increasing population, we shall require a much greater importation; consequently our gold, instead of being circulated in our own country with trade and manufacture, &c., &c., will be distributed in a foreign land—enriching them, and making us poor indeed.

I am aware that it has been a doubtful question as to the capability of our native soils; but when the vast tract of useful uninclosed lands is taken into the calculation, with the deplorable state of cultivation in various localities, added to which the improved cultivation that might be effected by giving security to the tenant farmer, there is no longer a doubt as to the supply from our native soils being quite equal to the demand, except in unfavourable seasons, such as the present, in which our foreign neighbours would gladly supply us in exchange for our gold. And as it is a question of the first importance that a nation should, if possible, grow sufficient food to supply the inhabitants, one great impediment arises in allowing the land to be run out at the end of a term (what the Scotch farmer calls "whipping the land the last three years previous to the expiration of a lease"). Such a system takes the next tenant five years to restore its fertility; consequently the productive powers of such land are lost to the community at least for eight years, in consequence of the tenant having no security for his investment.

Having entered into the subject to a greater extent than I first intended, feeling such an interest for the rising generation, I scarcely know how to stop my pen; but, in conclusion, I must congratulate my brother farmers that they have found a friend to represent their case, which I consider Mr. Pusey has done with the best intention, and that he is consequently entitled to our grateful thanks. And I trust that Mr. Pusey will persevere until he has gained his object (so essential for the benefit of all classes in society), and that he will be supported in such claims by the tenant farmers; who, I sincerely hope, will not fail to make it a leading subject at all their forthcoming agricultural meetings, showing to the public that at the same time they are desirous to reward the agricultural labourers for industry, sobriety, and long servitude, that such societies cannot flourish (although actuated by the best intentions) unless the principal labourers (the farmers) are protected in their outlay, "rising early, and late taking rest," not only to find employment, but also to see it executed. In reference to the Bill which has been before the Legislature two successive sessions, although apparently not very great progress has been made, still it must be admitted that, under all the circumstances (beset with prejudice), one essential point is gained, resulting no doubt from the evidence given by practical persons summoned before the committee, which the 11th section of the report sets forth, showing "that compensation to the out-going tenant is highly beneficial to agriculture, the landlord, and tenant farmer; to lead to a great increase in the productiveness of the soil, and to extended employment of the rural population." This is confirming what has been stated often in your *Express* by various correspondents, but mark what follows by the 13th and 14th sections. The first points out the necessity of removing all difficulties that stand in the way of its extension by the voluntary act of landlord and tenants. The predominant feelings of the committee are shown more forcibly by the next section—"That any attempts to make its general introduction compulsory would be met with great practical difficulties, and your committee rely for the general and successful adoption of the system of mutual arrangement between landlords and tenants." From the report no doubt much benefit will result, as I have before remarked; landlords and tenants will be better informed of the relative position they hold as owners and occupiers of the soil. Viewing the report collectively, we may be encouraged to hope that before another session shall pass away, the wisdom of our Legislature will be enabled to remove what are termed practical difficulties, in order that the cultivators of the land in the United Kingdom may be enabled to give full scope to their best energies, and thereby that the land shall be made to produce an increase of food and employment, that the inhabitants who stand in need may be better fed and clothed.

I am, sir, yours respectfully,

Court Farm, Hayes, CHAS. NEWMAN.
Sept. 5, 1848.

—Mark Lane Express.

INDIGESTION IN HORSES.

To insure perfect and healthy digestion, it is essential—nay, absolutely necessary, that each process which the food undergoes should be completely and perfectly performed. Perfect mastication and insalivation are indispensably requisite to reduce the food to a proper consistence to be acted upon by the gastric juice in the stomach, where it undergoes the change called chymification. Here, again, is an important office, and one more espesially essential to health than, perhaps, any other function in the animal economy. "This," says Dr. John Hunter, "is the root of man; and if you want to eradicate any evil, you must look to the root of it—look to the digestive organs for the origin and constant provocation of all diseases." Dr. Paris, in his Pharmacologia, has so ably described this, that I cannot omit it here: he states, "that an impression made upon the stomach by a medicinal agent should be the means of exciting an action in the distant parts of the machine will not appear extraordinary, when we consider how universal a sympathy and control this central organ exercises over every function of the body; imbued with exquisite and diversified sensibilities, subjected to the first and coarsest impressions of our various ingesta, stretched occasionally to an enormous extent by the unrestricted indulgence of appetite; disturbed by passions, exhausted by volition, and debilitated by intense thinking; in short, assailed by numerous foes from without, and harassed by various revolutions from within, can we feel surprised that the aberrations of this viscus should give origin to the greater number of maladies with which we are affected?"

The stomach of the horse being, like all other organs, subject to be acted upon, either beneficially or otherwise, by certain modifying agents, we find that, for the well-being of the animal, his food should be of a definite quantity, the best in quality, and given at regular intervals. His exercise, also, should be regular, or as nearly so as possible, combined with ease and quietness, and a uniform temperature of the body for a certain time after each meal. These circumstances, unimportant as they may appear to many, should be strictly attended to; for then the gastric juice will become thoroughly commixed with every particle of food, by the successive contractions of each part of the stomach producing a series of folds and wrinkles, and these serving to agitate the mass, and bring every portion, in its turn, to the surface, there to be exposed to the influence of the solvent.

By these means a healthy state of digestion will be insured, while any deviation from them will interfere, more or less, with every organized tissue in the body; and although such deviations may seem simple and of no moment, yet they will, sooner or later, alarm the owner by the appearance of, perhaps, a series of complicated and deep-rooted diseases, undermining the natural function of every vital organ. It is true, the young and vigorous horse may digest the most unwholesome food for a time; but even in him its effects will soon become apparent. How much readier, then, will the horse become a victim to it, that has been previously debilitated by age and hard usage, and is, perhaps, labouring under the effects of the ravages of some previously existing disease!

I am thus brought to the more immediate subject of my essay, INDIGESTION. This may be considered under two heads—chronic and acute. The symptoms of chronic indigestion are—the animal is hide-bound, he has an unthrifty appearance and a staring coat, and is what is commonly called a delicate feeder. Occasionally, also, it is indicated by a depraved appetite, loss of condition, a coarse and undigested state of the fæces, and general weakness, which comes on gradually. At length debility and extreme emaciation become more and more evident, until death closes the scene. The patient will live as long as the body contains the least portion of fat that can be absorbed for its support; but this is only an effect of secondary consequences. It frequently terminates in Acute Indigestion, and this is the division to which I wish more especially to confine myself.

Predisposing Causes of Acute Indigestion.—The principal predisposing cause of acute indigestion consists in a congested state of the vessels of the mucous membrane of the stomach and intestines; consequently, there is the want of the proper secretions, and constipation of the bowels is the result. This comes on gradually, and may continue for a length of time; but it is only waiting, as it were, for an exciting cause to bring on either inflammation, acute indigestion, or spasms. This torpid or abnormal state may be produced by many causes —such as irregularity in the quantity and quality of the food; food unmasticated in consequence of diseased teeth; long and repeated deprivations of food and water: crib-biting, bots, quidding; previous attacks of acute indigestion producing diseased action and diminished energy of the organ; constitutional or hereditary predisposition; ir-

regular exercise and temperature, diseased liver, &c. &c.

Exciting Causes of Acute Indigestion.—The principal exciting causes are as follow:—The animal has been allowed to eat, after long fasting, a large quantity of food, so as to overdistend his stomach (wheat, or green food, is most likely to produce this effect, especially if he has been harassed in work immediately after eating), by which the normal function of the stomach has been suspended, thus rendering it incapable of getting rid of its contents; so that, after repeated and continued efforts, it becomes tired, and the powers of contraction and dilatation are paralyzed. But the mischief does not end with the mere suspension of the powers of the stomach; for food, if it be not digested, cannot remain long exposed to the heat and moisture of that organ, without undergoing some chemical change unfitting it for digestion. Then that mysterious phenomenon, that most beautiful chain of harmony in function which exists between all the organs in the body, is broken; and if not restored, death speedily closes the painful scene.

The state of the atmosphere has a great influence in bringing about this disease; thus it is found to be more prevalent at one time than at another, even at different periods of the same month. A dense moist atmosphere, assisted by a long wet coat, being a good conductor of heat and electricity, will rob the animal of his usual spirits and energy. Languor and a peculiar susceptibility supervene; the stomach, previously weakened by some predisposing cause, readily becomes excited; and, occasionally, the slightest error in feeding becomes productive of this dangerous disease, which at times proves fatal. It is true that the atmosphere, saturated with moisture, is quite sufficient, without the aid of a long coat, as it is incapable of carrying off the insensible cutaneous perspiration which is condensed upon the surface as it is formed, thus preventing that cooling and salutary process of evaporation, or exhalation, which is at all times so desirable. The bronchial exhalation from the lungs is also diminished under such circumstances. So, whenever a feverish state of the system is induced, whether by obstructed perspiration, or undue excitement from improper or unusual food in the stomach, the intestines is interfered with, and its usual secretion becomes vitiated, and at times is entirely suspended. That which is secreted often becomes highly deleterious, and thus, for want of that bland and natural secretion, the vascular and nervous papillæ are left, as it were, exposed to undue irritation, which rapidly runs on to inflammation of a serious and dangerous nature. Undue or inordinate exertion is likewise frequently an exciting cause.

Although the muscular coat of the stomach and intestines belongs to the class of involuntary muscles, and the nerves supplying them to the class of the respiratory-motor system, yet, by means of the sympathetic nerve, they have an intimate connection with the nerves of voluntary motion; and there is consequently very strong sympathy kept up between them. Thus, when the voluntary muscles are inordinately exerted, the action of the involuntary ones is unusually excited; there is an increased flow of blood to the stomach and intestines, followed by distention of the vessels; and, if any pre-existing or preparatory cause is lurking in that organ, congestion and inflammation rapidly ensue. The delicate mucous membrane swells, thus closing the mouths of the exhalents, and congestion is established, while indigestion and constipation are the natural results. Thus it is that we invariably find constipation of the bowels protracting and aggravating the inflammation, and *vice versâ*. Ultimately the peristaltic or vermicular motion is suspended, owing to exhaustion or loss of power in the muscular coat; the acute sensitiveness of the villous coat becomes destroyed, and the disease terminates in gangrene, betokened by gradual quietude succeeding intensity of pain, which is, in fact, the harbinger of death, but very frequently mistaken by the inexperienced for the commencement of recovery.

Symptoms of Acute Indigestion.—Acute indigestion may or may not be attended with a symptomatic affection of the brain, producing stupor or staggers; as I have seen innumerable cases where this was not present, although the stomach was distended to the utmost. The horse is generally attaked in the midst of his work, becomes uneasy, and will lie down, and at times at full length, for a considerable period; the pulse varies from 50 to 60, and is not very full—the extremities are cold—the visible mucous membranes are not much injected—the bowels are constipated—the abdomen may or may not be much swollen and tense—gaseous eructations take place from the stomach—the mouth is dry and clammy, and a peculiar haggard countenance is observed, which becomes more and more ghastly as the disease advances. These symptoms may be succeeded by more violent ones, and the disease will run its course in a few hours, or the animal may linger in this state for many days, and, if not relieved, it will ultimately terminate fatally.

He will continue to lie down and get up again, will stand a few minutes, then walk round and lie down again, groaning as he does so; but the pains are not so acute as they are in colic or in enteritis. As the disease advances, his pulse becomes quicker, harder, and smaller, and the pains are more and

more violent; yet he still lies down carefully—he perspires—falters in his steps—looks occasionally at his sides—reels and staggers. His mouth is open, and his nostrils expanded to the utmost. As the pains become more intense, he dashes himself about in extreme violence, plunges in every direction—wheels round and round, and often falls backwards with extreme violence as if in the pangs of death. If a rupture of the stomach has taken place, the animal now makes violent efforts to vomit, and the other symptoms too plainly bespeak that conflicting and exhausted nature can no longer stand up against so determined an adversary; and the poor animal, staggering, falls to rise no more.

Treatment of Indigestion.—For the best mode of counteracting the predisposing causes, I would refer to the former part of my essay, where I speak of the function of digestion. I would give also small doses of aloes, or calomel and opium, combined with mild tonics. "How much," says Mr. Percivall, "do a few well-timed doses of laxative medicine contribute to restore the condition of a poor horse! How influential so iling is in producing a thriving diathesis, and promoting fatness, and sleekness, and every other appearance indicative of robust health; and yet these ameliorated states, probably, were not preceded by any signs whatever of disorder or disease."

In the treatment of *acute* indigestion, I would bleed more or less copiously, according to the symptoms present; but this must be left entirely to the judgment of the practitioner, who will be governed by many circumstances. I would then give a large dose of aloes in solution—the quantity, of course, must be regulated by the size of the patient, stage of the disease, and constitution of the animal—combined with the tincture of opium, and the spirit of nitric ether. I also throw up clysters, and employ hand-rubbing. If the pains continued, I would repeat the draught in half an hour or an hour, according to the urgency of the symptoms, perhaps withholding a portion of the aloes. If any swelling appeared, I would combine with the other medicaments an ounce of the aromatic spirit of ammonia, and also abstract more blood. If no relief was afforded in two hours or two hours and a half, I would again give half the above draught, with a quart of linseed oil, and an ounce of sulphuric ether, which I would not hesitate to administer every two or three hours should the case require it, and bleed again and again if the pains continued and the pulse would admit it. I have known instances where two ounces, three ounces, and even four ounces of aloes, combined with large doses of the above agents, were administered to large cart-horses in the course of a few hours; to which promptness of treatment we could alone ascribe our success, although it has been some days before purgative action has been set up. I am aware that there is a mode of treatment—giving compounds of ammonia in the first stage of tympanitis, when the saccharine fermentation evolves carbonic acid gas, and compounds of chlorine in the latter stages, where the putrefactive fermentation evolves sulphuretted hydrogen gas, and which compounds are decomposed and rendered inert by these medicines. I have used them with benefit, and they are in strict accordance with scientific principles.—Thomas Greaves, in Veterinarian.

ROADSIDE STACKS.

A correspondent has called our attention to a very objectionable practice frequently adopted of stacking corn and hay near to the roadside, thereby affording additional facilities to the evil disposed to commit acts of incendiarism. Shakspeare, who possessed a more intimate knowledge of the workings of the human mind than any man who ever lived, observes—It is "the sight of means to do ill-deeds that makes ill-deeds be done." We should therefore be careful how we exhibit "the means." We have known instances in which property thus exposed, upon the same spot, has been set fire to several times, and from no traceable cause but sheer mischief. Another very thoughtless and incautious course is that of stacking hay and corn immediately side by side of each other. Several cases have come to our knowledge this season, of old stacks of hay and corn, of both last and this year's growth, having been destroyed, in consequence of a new hay-stack taking fire from self-ignition. In a showery or uncertain season, the precaution should be taken of stacking the new hay separately, and apart from other stacks or buildings. If the accidents from this species of incaution continue as numerous as they have done for the last two or three years, the insurance offices will refuse to pay for losses resulting from such causes.

We note the following observation in the *Lincolnshire Chronicle:*

"We have occasionally fire-balloons sent up by some young men in Louth, which we conceive to be strictly dangerous at this period of the year."

Now it should be generally made known that all persons of age, themselves guilty of, or being parties to, such practices, are liable for any damage that may result; and where not of age, the parents are liable, if in any way cognizant of the act. It is not long since that the stock and buildings upon a farm, of the value of upwards a thousand pounds, were destroyed in this manner.

POTATO DISEASE AND ITS REMEDIES.

In your last are two very important letters on the check of this vegetable pestilence—one by soot (and salt), on the well-known authority of Mr. Cuthill; the other by charcoal, under the signature of "Amos Beardsley." Although these dressings have not been universally successful (as few remedies are), yet the very striking cases given by them are confirmed, not only by numerous scattered instances, but the good effect of soot, by Stinchcombe farm, is described in Mr. Morton's celebrated treatise on soils, where potatoes were grown 30 years in succession, from his own seed, improving in quantity and quality from year to year—never dunged, but always dressed with soot; and that of charcoal by the instances of coal-ashes also, (which as usually sifted, consist chiefly of porous carbonaceous matter), and of which one of the most striking was at Stoke here by, where a plot dressed with coal-ashes alone continued all sound, whilst every one (so far as I know) within two miles of it was completely or severely blighted.

Not being of the number who condemn this root as baneful to society, but on the contrary, regarding it as one of the principal blessings of agriculture, and therefore anxious for its restoration to its former importance, I studied, in the autumn of 1845, with great care, the progress of its diseases, from their first appearance in 1764 to the outbreak in that year, and gave a lecture upon it to the neighbouring farmers, of which an abstract was printed. But my views of the remedy, requiring a succession of years, were not flattering: and my deductions, although extensively borne out by subsequent reports, have been lost in the crowd of conflicting opinions.

This confusion seems to arise, mainly, from regarding the potato rot as a single disease, and consequently endeavouring to find a single cause for it; whilst both the symptoms and causes being various, these essays are consequently inconsistent and contradictory. Whereas the fact appears to be, that different diseases produced by different causes, falling upon the weak point of the plant's constitution, as in the case of animals, end alike in putrefaction. And this constitutional weakness, the tendency to putrescence, seems to me to have been gradually induced by yearly inoculation of the sap* with dung juice, by the cut faces, for the greater part of a century.

That this susceptibility has been progressive, and not sudden, was inferred from the fact that, although the great outbreak was in 1845, the rotting tendency of the plant's diseases, and the precautions requisite for keeping the tubers sound in store, have been for many years on the increase; and the sudden outbreak may be understood, from the consideration of the very unfavourable season of that year, following the exhaustion produced by the luxuriant produce of 1844; whence it broke out virulent and infectious,* like the putrid diseases of animals.

Organic life maintains a constant struggle between the vital forces and the chemical fermenting forces of the material elements: so that whatever tends to strengthen the vital force (as fresh air and sun light) gives it preponderance over the fermenting; and *vice versâ*—fog and close damp, promoting decay and depressing vital energy, favour the disease; and so likewise the critical period when the vital forces are fully taxed in storing starch in the tubers, or feeding the blossoms; or are, in degree, exhausted by a previous inordinate crop.

These considerations, thus summarily stated, are sufficient to indicate, for the main point

THE REMEDY.

Gradual restoration of the hardiness of the plant, by persevering antiseptic treatment of the seed. And as the constitutional weakness appears to have been gradually induced; so, I fear, the efforts to cure the disease by direct remedies will only end in season after season of uncertainty and disappointment.

The seed grown upon peaty highlands, *without dung*, used to be hardy; when dunged, it lost this property (Patullo). Let the seed still be grown on such grounds, but with soot, which is antiseptic, instead of dung, which is putrefactive. Where soot is not accessible, use peat charcoal. And where

* Inoculation with dung juice. The most striking evidence of the disease being, generally, in the sap, is, the blotching of the tap root; worst at the lowest part, next the old set.

* Infectious. This character appears in the occasional spread of the blight from points or small patches; the protection sometimes manifested by high walls or high hedges; extensive districts being affected in succession, whilst detached and sheltered spots in the midst of them have escaped, of which I have a remarkable instance to report, when ripe and dug; and in the attack of plants grown from seed imported from regions which the disease had not reached.

peaty lands are too distant, treat the seed land with vegetable manures (green manures, grown on the spot, perhaps best, on which much remains to be said); and still soot or charcoal in the furrows.* Dung for market produce; but never reset a dung-grown potato. And thus in the course of years, more or fewer, as the vital forces are favoured by the seasons, we may hope to see this valuable plant throw off its weakness, and resist the attacks of disease, as in its better days.

J. Prideaux.

ABSTRACT OF THE LECTURE ABOVE ALLUDED TO.

The lecture began with the importance of the potato, as yielding the largest produce of human food; and by its place in agricultural rotation, and productiveness in seasons unfavourable to corn, being the best preventive against famine. The present blight was then described.

Its first *alarming* appearance was in the beginning of August, when it broke out in several places along the southern districts, and spread with terrific rapidity. It had begun, however, much sooner; for he had seen fields curled a month before, and potatoes dug sound in July had begun to putrefy in store.

The first appearance on the *plant* was a dark spot on the margin of the leaf, which withered and curled the leaves, and spread rapidly to the stem. The stain quickly ran down the stem, until the entire plant become blackish; whole fields thus having become withered and dead within three days, from a state of luxuriant verdure. All situations, high and low, and all soils, have been alike visited; the richest having suffered most; but no mode of culture or kind of manure can boast of having escaped. Here it seems, in some cases, to have been stayed; the potatoes remaining sound, after the plant was killed above ground; but this, unfortunately, was not the common case. On lifting the tubers, those nearest the surface, *generally*, and too often the whole crop, were spotted like bruises, the skin peeling off; and on cutting them, they exhibited different stages of putrescence; some having only a brown spot or two, others with the cortical layer more or less generally known; and others in a soft, pulpy state, with a pungent putrid odour.

The disease appears generally to have entered the tuber by the stem; and thence to have spread along the cortical layer; but when it reached the nose or crown end, that, being the most juicy, rotted the quickest; so that where the tuber was infected throughout, the crown end was often the worst. At this period, before it became soft, the smell and taste were of a mixture of vinous and putrefactive fermentation, with the pungency of horse radish; but the sap did not affect test paper, either as acid or alkali.

The Lecturer's microscopic examinations were then recounted; by which the fungi and animalcules observed, appeared to be casual effects of the disease, and not essential symptoms.

A potato once infected, how slightly soever, seems to be doomed; the taint spreading and penetrating gradually, till it becomes a mere putrid pulp; and as many, stored apparently sound, have rotted since, we cannot say how the stock may be reduced three months hence. But there is no need of *wasting* any: the worst, until actually rotten, may be ground into starch, or crushed and pressed for cattle food; and the suggestions for preserving such as were sound, or nearly so, were recounted.

The prudent farmer will probably not hazard the use of *seed* from his unsound crop of this year, if he can get sound, to be depended on, at anything like a reasonable price. He may, however, wish to preserve some, in case of emergency.

For this purpose, bearing in mind that the disease appears to enter at the stem end, whilst the crown end is well known to be the best for planting, he may cut off the crown ends from his soundest potatoes, and pack them in very dry earth; or if he has room, spread them out first to dry. (It will be seen presently, that potatoes, cut in autumn, readily heal over, if allowed to dry; and I think they do the same in dry earth.) If the infection has entered, but not reached the crown part, that may continue sound, though the stems should decay. The stem parts may be either used for consumption, or if more convenient, packed in dry earth, apart from the crowns. The latter should be looked over every month or six weeks, to pick out any that fail; but the dry earth between will probably hinder any infection from one to another. Such seed, rejecting all that shew any spot of infection, would very likely produce wholesome crops, in a favourable season. It might be prudent to try the vegetative power of a few, in a hot-bed, before planting them: some steeped in solution of salt and blue vitriol, which has been found useful formerly (Brit. Husb. ii. 280); but as, in this case, the partly dried sets would absorb it freely, the solution must be weak.

The causes of the blight were next enquired into.

Its first appearance on the plant, beginning at the leaf, running down the stem, attacking first the tubers nearest the surface, and entering them at the

* The top dressing with sulphate and nitrate of soda may also be very generally tried on small portions of seed culture. Its effects have been useful, and it has no putrescent tendency. I should prefer sulphate of soda, nitrate of potass, and sulphate of magnesia, as presenting a greater variety of the vegetable salt bases.

stem end—all indicate the disease as having commenced in the leaf; which is corroborated by cases quoted, where the plants above ground were quite dead, but the tubers uninjured.

Its sudden appearance, too, and rapid progress along the southern quarter of England, without much extending northward, indicate an atmospheric influence, which is further confirmed by its commencement having been, in several instances, influenced by the shade of trees and hedges; and particularly by a curious circumstance observed on Dartmoor, where the N.E. side of the plants was blighted, the S.W. not; so that, looking at the field in one direction, it shewed still green and flourishing; whilst surveying it in the other, it appeared scorched and withered.

Moreover, just before the blight took attention, there was a remarkable blighting wind, observed in Hampshire; and a storm of peculiar character ran across Normandy and Belgium, and perhaps much further east; but of this I am not aware.

With these facts betore us, we can hardly resist the inference, that the plant was attacked by an *atmospheric blight* on the leaf, which descended, by the stem, through the soil, to the roots.

On the other hand, it must be remembered that great quantities of early potatoes, stored apparently sound weeks before the blight was heard or thought of, have since completely decayed; and I saw, early in July, considerable fields, both in Devon and Cornwall, curling and withering, though without the black virulent appearance that afterwards occurred. Moreover, in pulling up the blighted stalks, in various counties, and at different periods of the disease, up to quite recently, there was found a part of the stem just above the old set, where the stem and bark were quite rotten, and the woody fibre evidently in progress of decay, the old set itself being putrid and offensive; and in several recorded cases, the ground emitted an odour, especially in the evening, such that it was unpleasant to walk over; and labourers could not be readily induced to dig the potatoes. These circumstances seem to demonstrate an underground action upon the old set and the root: which derives strong confirmation from the saturated state of the soil, by long continued wet, and the remarkable deficiency of sunshine, *requisite* for the evaporation and circulation of the sap, and its vital digestion. Hence it is inferred that the old set, having rotted by excess of moisture, sent up putrescent sap, which, wanting the correcting action of sunshine, circulated in the same state, rotted the stem, killed the plant, and infected the tubers. And they explain the *sudden* appearance of the evil, by the rapid growth, under the hot sun in early July, upon the wet soil, having so weakened the plant, that when the wet again set in, it gave way.

It appears to me that both are right, without disputing the point. We cannot deny the predisposition in the plant (or soil,) when we find large quantities dug and stored, apparently healthy and perfect, before the blight was thought of, having since become rotten: nor can we deny the atmospheric influence, when we see the disease limited for a time by latitude; affected by shade; acting on one side of the plant only; and killing the leaves and stems above ground, while leaving the tubers sound and uninjured below. The sets were probably weak from being overgrown last year; they would, therefore, have given a precarious crop (as they have in the north, and in Ireland,) subject to decay from wet and want of sunshine, or any other sufficient cause, and flourishing when circumstances were favourable, but yielding the more readily to a blight, which seems to have swept across the middle of Europe, and to have attacked other vegetables besides the potato. I have seen beans and peas blighted, and have accounts of onions, cabbages, and other vegetables, attacked in like manner.

How, then, is such a disaster to be checked in future? In any future similar or other virulent blight, from above, running from the leaf down to the root, it may be prudent, as soon as its character is fully established, to mow down the whole blighted plant, before the infection reaches the ground, and burn it without delay, thus cutting off the infection from the tubers. It will then be a question, whether to dig them without delay, or leave them to the *chance* of ripening, without the aid of leaves. This may be best decided on the occasion, and according to circumstances. But as a general rule, one-third might be dug immediately; one-third left long enough to ripen, if they will ripen; and the other third dug between the two; so as to do the best with one-third or two-thirds for the time, and learn what may be best to do in future. And as this mowing off the plant is a severe check to the tubers, it must be done only as the lesser evil; where the injury from the blight threatens to be greater than the benefit from the leaf.

Then followed the more important inquiry, how to restore the health and vigour of the potato, and so enable it to withstand unfavourable seasons and circumstances?

With this view, the progress of its diseases and their prescribed remedies were traced down, from the earliest appearance of "curl" in 1764, through the reports of the Society of Arts, of the Manchester and Bath Agricultural Societies, of the Board of Agriculture, of the Scotch Horticultural and Agricultural Societies, &c.; summing up as follows—

The DISEASES may be thus arranged—

The half curl has been already described; when the plant runs up well, with its long leaves, which after a while curl more or less, losing their vegetative functions in proportion; and the crop, consequently, falling short.

Rust is more known in Germany than here; small rusty spots gradually increasing till they overrun the whole leaf, and hinder its respiratory action.

Curl is known everywhere; by our farmers under the name of "cridley tops." The plant is more or less stunted; the leaves curl up, and the stalks twist and often wither; the plant looks as if starved, and produces few and small potatoes. The old set remains in the ground undecomposed, having never yielded up its juices to the plant. This was the *old* curl, but a similar twisting of leaf and stalk accompany several of the other diseases.

The queer name of Bobbin Joan is given to a disease, described in Cornwall; where the set sprouts, but stops short, just under the surface of the ground, as if afraid to meet the light and air. Here it forms a little knob, which connected with the old set at bottom, has suggested its comical name. This sometimes occupies large patches in potato grounds, leaving them as bare as a fallow. The set is found rotten within, though apparently sound on the outside. I have heard of it only in recent times.

In the next disease, most improperly called "corrupted," the set does not vegetate at all, but remains sound and unchanged in the ground. The productive power, only, seems to be gone, and the term "barren" would best designate its character.

Taint or failure is a modern disease, like the above, so far as that the set does not vegetate; but its opposite in another respect, that in *taint* the set decays without sprouting; whilst the *barren* set remains sound and entire.

Scab is a disease of the tuber, appearing in excrescences upon the surface, in dry seasons, breaking out into pustules, containing mouldy particles, and is supposed related to dry rot.

Canker shews itself in little holes or cavities, in wet seasons, and is perhaps related to wet rot.

Both these diseases increase in the ground, as long as the potatoes remain after being ripe.

Wet rot I have not found particularly described; but from the indirect accounts within my reach, it appears to differ from taint (above described,) chiefly in throwing up shoots, before the set decays, and then killing them by putrescent sap, and in being confined to wet seasons.

Dry rot is said to make its appearance in the stores, or soon after the sets are planted; where they dry up hard, if the season is dry, without vegetating; and rot if wet comes in. It does not shew itself much in digging the potatoes, which, unless scabby, are only rather dull and wrinkled. But after a while brown spots appear, which gradually run together, and the surface scales up. It becomes discoloured and offensive within, and is impregnated with a sort of mouldiness, which appears also on the surface. The rot then spreads in the pits, so as sometimes to destroy 3-4ths of the store. This disease first appeared in 1830, and is different from the present blight.

This review of the progress of disease in the potato leads to an important inference. In the early disease the complaint often was, that the set would not decay in the ground, to feed the infant plant; remaining sound and hard till Michaelmas. But the diseases of modern times seem mostly connected with putrefaction of the set. Hence the inference that the increasing weakness and uncertainty of the potato is due to a *progressive tendency to putrefaction*; occasioned, perhaps, by repeated action of fresh dung on the sets, in the drills, from year to year.

Of the variety of inconsistent CAUSES assigned, the following appear the most probable:—

Over forcing, by rich manure;

Weak second shoots, from earthing up;

Growing too long on the same land, without change of seed;

Over ripeness before digging;

Bad storing, allowing them to heat, or get mouldy or frosted;

Letting them sprout in store, and rubbing off the first sprouts, the second being weakly;

Too long exposure of the cut sets, before planting.

Of the REMEDIES prescribed not less varied and inconsistent than the causes, the most generally successful have been the following:—

Growing the seed potatoes on high lands and peaty soils; with little or no dung, and without earthing up;

Digging before ripe; drying before storing; and storing dry; safe against frost or heating;

Selecting middle sized potatoes that have not sprouted; cutting them some weeks before setting, to let them heal over; and taking care that the cut sets do not heat.

But all these, which have been so successful in their time, have been baffled one after the other; diseases appearing in the same, or modified forms, where they were hoped to be nearly exterminated. This has been charged, however, by a recent Scotch writer, to the introduction of the use of dung, by the Highland seed growers.

But there are two remedies, not so generally tried, which do not appear to have failed: namely,

Soot, in the drills, with the set; and

Nitrate of soda with sulphates of soda and magnesia, as top dressing to the young plant.

Soot has been used on the same farm (Stinchcombe, near Wotton-under-Edge) for 30 years, without change of seed, and with excellent crops, both in quality and quantity.

The top dress, in four years' experience, has produced increased crops and healthy plants, from seeds previously unsound. (Barochan, near Paisley, Scotland.)

Between these applications there is marked analogy: Soot contains sulphuric acid and ammonia, which is nitrogenous. The sulphates of the top dress contain sulphuric acid, and the nitrates are nitrogenous: whilst albumen, the active nitrogenous ingredient of the potato, contains also sulphur. The dressings thus appear related to the vital agent of the potato as well as to each other.

Some publications of the present year (1845) were then brought forward:—

One by Mr. Thompson, addressed to the Royal Agricultural Society, and others in confirmation, establishing the preference of under-ripe potatoes for seed.

Another by Mr. Patullo, to the Scotch Agricultural Society, attributing the progressive putrescence to the excessive use of dung upon the peat where they grew the seed, and giving details for the separate culture of seed potatoes.

And a pamphlet by Mr. Arthur, entitled "The Potato Problem solved," charging it, in great part, to cutting the sets after the eyes begin to sprout, when the cut bleeds "like a cut honeycomb," wasting its vital sap, and leaving the empty vessels to absorb cold moisture and noxious or putrid matters from the soil and manure.

Since these appeared, Professor Johnstone has been making personal examinations through the potato districts of Scotland; and the Scotch and Irish Agricultural Societies are taking up the investigation collectively.

The lecture concluded as follows:—

Assuming, then, that the plant is not actually wearing out with age, but suffering under a progressive tendency to putrefaction, and consequent susceptibility to disease, let us bring together the most successful remedies tried, examine the beneficial action of each, and deduce a method of restoring and retaining its health and vigour.

In cultivating for the market, our objects must continue to be quantity, mealiness, and pleasant flavour. But great produce is promoted by fresh dung in the drills; and it is no more than may be expected that the absorption of the dung juices, crop after crop, should gradually produce the tendency to putrefaction. And in Belgium, where they dung very heavily, up to 60 tons per acre, and liquid manure at earthing up, the varieties of potato wear out quickly, and they have been the greatest sufferers in the present blight. Moreover, the most mealy potatoes are the worst for seed; and excessive growth seems to weaken the vegetative power. Hence, whilst we still force quantity and quality for the increasing population, our *seed* potatoes require a different system of cultivation.

It appears that *the best seed is grown upon peaty highlands, with little or no dung, and not earthed up; that the most successful seed manures have been soot, and top dress of nitr. soda and sulph. magnesia; that they are best dug before ripe; dried and stored dry; cut before the eye begins to sprout; not heaped together till healed; and that the crown end grows better than the stem end.*

In what way do these different proceedings benefit the seed potato?

On *high lands* the climate is cool, and they do not over ripen. They also get hardy, for curl is not known, in Scotland, more than 400 feet above sea level; equal to 600 or 700 in our climate.

Peaty soil gives them abundance of vegetable mould, of which they are known to be fond; fresh broken pasture having been long esteemed for this root.

The *less dung*, the less putrescent matter to absorb; and the less danger of overgrowth, to weaken the vegetative power.

Soot has no putrescent quality, but rather the contrary; and can supply the nitrogen and sulphur required in the vital sap.

By *not earthing* up, the weak second shoots are avoided, and the first formed tubers left the nearer to the air and light, which particularly strengthen them for seed.

The top dressing of *nitrate of soda* and *sulphate of magnesia* supplies the vital sap with nitrogen and sulphur; both of which are contained in the albumen, the active principle of the sap. Magnesia is also useful to the potato, though we do not certainly know how. And it is not unlikely the fertilizing effects of soot and these salts may be promoted by other means not yet explained.

By digging them *under ripe*, the proportion of vital sap to the starch is larger, and the seed the more active. And the same is the distinction between the stem and crown ends, the latter being the most juicy. But as the juice is most active in growth, so it is in fermentation; and it is the more needful to be *stored dry*, to avoid all unnecessary inducement to heating or putrefaction.

By cutting either in autumn or some weeks before setting, and before the eyes begin to sprout, we save the loss of vital sap, by bleeding; the absorp-

tion of any noxious matters from the soil; and the chance of the sap fermenting upon the surface, and infecting the set. Many farmers will recollect patches of potato set in the morning having thriven well; whilst the sets left out, or in bags, during the heat of the day, and set in the evening, have curled or grown poor and puny.

There is also another means of strengthening the productive power. The potato seldom ripens its apples on high grounds, but still makes the effort to do so, throwing out its blossoms, and forming the blossom seed, which takes up much of its vegetative forces. In growing for seed, then, the blossoms should not be allowed to set, but cut away as fast as they appear, that the whole vegetative force may concentrate in the tubers.

Now there appears nothing in any of these likely to interfere with each other, and therefore nothing to prevent our taking advantage of them *all* in cultivating potatoes for seed, as follows:

1. To grow them on high ground, and peaty soil where convenient, or else with plenty of *vegetable* manure or vegetable compost. To use little or no dung, where soot can be had, of which about 20 bushels per acre may be spread out in the drills. Where soot cannot be obtained, a half dressing of dung may be ploughed under in *February*; and well mixed in, before setting the potato.

2. To cut the seed from sound, well chosen, middle sized potatoes, either in autumn or in February, before they begin to sprout; and keep them spread out, as thin as possible, till they are dried and healed over; which may be helped by dusting with fresh slaked lime, or with gypsum and clay; and throw back one-third of the stem end, for consumption.

3. Set them in April, or beginning of May, and keep them clean, but not earth them up. At usual earthing time, top dress them with 1 cwt. nitrate of soda, and ½ cwt. each sulphates of soda and magnesia per acre. Where soot is plenty, half the top dressing may suffice; but where no soot, the top dress is the thing to depend on.

4. If they blossom, cut off the flowers as fast as they appear; and dig the potatoes before they are ripe; as soon as they will bear the usual handling, without crushing the peel. Let them dry well on the ground, and store them dry, with air enough to prevent the least heating, but well protected from frost.

Of course, this union of different means must be proved by experiment, notwithstanding their well attested success separately. It will probably be improvable in different ways for different soils and circumstances.

THE MANAGEMENT OF GRASS LAND.

BY ROBERT SMITH, LATE OF BURLEY, RUTLAND.

(Prize Essay.)

The *Grasses*, numerous as they are, may be truly spoken of as indigenous to the whole earth: they seem to arise spontaneously, and are found to clothe the surface of every zone, taking a substance varying according to the soil and climate, and forcibly pointing out the importance of assimilating our modern culture to the waywardness of nature. The best grasses—those which are most productive and nutritive—are found in the more *even* climates; such climates as have the least cold in winter, and no excess of heat in the summer: these attain a greater length and have less bottom-grass in the warm climates; and in the cooler ones there is a preponderance of bottom-grass, it being there found to spread more evenly or thicker near the ground, is of a darker green appearance, and less subject to run up to bents.

No department of agriculture is more simple in execution than the general culture of the grasses; yet, from their great variety, and required adaptation to the various soils, &c., considerable judgment is necessary to carry out new designs, and to effect permanent improvements on the old grass or meadow lands.

In entering upon the general details of the effective management of grass lands, viz., "the actual practice in the management of downs and inferior pastures, meadows, and grazing-ground," it is advisable to treat upon each description separately, as the management should vary according to the influence of local circumstances; for there is a difference in the productive powers, each class having its peculiar affinities and functions in the vegetable kingdom.

It is a matter not unworthy of comment, that while every agricultural publication teems with information of every order for the advancement of the arable department, we rarely meet with the record of a single experiment for the improvement of grass lands, although it is well understood that this branch of agriculture is expected to furnish the majority of the supplies of both beef and mutton

during the summer months. Moreover, seeing that the main skill and enterprise of the agricultural order is particularly directed to the united production of cattle, sheep, and corn, by the adoption of the "alternate husbandry" (and in many instances regardless of the "old grass lands"), the theorist is led to dwell upon the *apparent* working of the subject, and to draw the conclusion that the arable land must be more grateful for the extra labour and artificial aid supplied, and consequently the quickest and more certain in its return. This, it is important to remark, is daily confirmed in practice; for it is found that the majority of occupiers endeavour to increase their arable lands by obtaining permission to break up a portion of their grass lands, though it is a novelty to find them laying down arable lands to permanent pasture. Hence it happens that a large proportion of the grass lands of England remains unimproved, and in many instances neglected, particularly in those districts where there is an over abundance of grass land in proportion to the arable, which occurs in some districts to an enormous extent. This is fully shown by the following extract from Spackman's 'Analysis of the Occupations of the People,' p. 35:—

	Statute acres.
Amount of arable lands and gardens	10,252,800
Meadows, pastures, and marshes ..	15,379,200
Wastes capable of improvement....	3,454,000
Incapable of improvement	3,256,400
Total acreage of England.....	32,342,400

The *Grazing-ground*, or what is usually termed the "old grass land," abounds most in the midland, eastern, and marshy districts of the northern counties, which are usually termed the grazing districts, whence the principal midsummer and autumnal supplies of fat cattle and sheep are drawn for the London and northern markets. The grazing-ground, on farms of any size or importance, is generally divided into two distinct heads, rich old pastures being designated and treated as "ox-land," and the middle or second-class pastures as "sheep-land." The latter is, however, frequently used to a great extent for cattle, as is perhaps more generally known as store or breeding land, though it is regulated entirely by the nature of the occupation.

The *Ox-land* consists of that portion of the occupation which has been under natural grass from time immemorial. It is found to exist and flourish most on those plots which have the greatest depth of soil, the period of production varying according to the character of the subsoil on which they are found. For instance, upon gravelly subsoils the grasses are exceedingly early in their spring-shoot, and they retain their vigour until impeded by the increased warmth of the summer sun's rays: the then standard of heat proves too great for that character of soil, and the grasses remain dormant for a considerable portion of the summer, but rally again as the season advances, when they become exceedingly valuable pastures to succeed other descriptions of soil. In the treatment of these soils nothing of importance is required beyond the usual routine. They are generally free from weeds, and require no draining; but they are grateful for light dressings of manure during the winter months, although preference is given to a mixture of soil with salt or lime; after this they are closed for early grass, and are usually ready for stocking in the early part of April. Careful graziers place their forward or prepared oxen upon them by degrees, increasing the quantity of stock with the increase of pasture; the oxen are usually taken back at night to their yards or winter-quarters during this month. In situations at a distance, however, the animals are provided with good shelter, and a liberal supply of stubble or refuse straw is thrown in a convenient corner of the field for them to rest upon. This is a prudent, and indeed a valuable practice, as the cattle are by it induced to leave the pastures during the night, and thus their manure is deposited off the land, and the pasture is allowed to sweeten. Hay or artificial food is supplied about the spot, which adds materially to the value and growth of the pasture, especially when frosty mornings occur. The manure thus raised is reserved for the weaker portions of the field, and applied the following winter.

After the first run of oxen have been sent to market, which is usually terminated by the season, these pastures are cleaned up, the clots are gathered or knocked, and the weeds(if any) removed by mowing or spudding. At the end of three weeks, or according to the season, they are again moderately stocked with cattle from the sheep or second-class pastures. About September, a few sheep are placed upon them, but not earlier, as these dry soils will not admit of their short bottom-grass being eaten out during the summer months. The next stage of management is to place the store-stock upon them for cleaning up the surplus summer-grass, or what is termed "fog," it being exceedingly desirable to have an *entire* clearance at least once a-year.

Those lands which are closely fed, and consequently contain less "fog," have but few beasts placed upon them, though they are usually more heavily depastured with sheep. These soils, from their dry and consequently warm character, are considered valuable winter-pastures for sheep, which, with attention and some artificial aid, are frequently ready for market when the period arrives for closing the pastures to prepare for early grass.

Pastures resting upon a *clay* or *cold* subsoil vary materially in their periods of production from those upon gravel, they being more backward in the spring (through the absence of warmth); but they are found to progress with the summer, and are indeed most nutritive during the hottest months. These pastures are not usually cleared of their winter-stock until about the 1st of April, when they are cleaned up, and allowed to remain until ready to receive the cattle. The period depends entirely upon the temperature of the spring, as in some situations they vary as much as from 10 to 15 days in the period of stocking, which proves inconvenient to the occupier.

The surface-soil of these pastures, being perfectly dry though resting upon a cool subsoil, is very durable, and carries a heavy proportion of stock, which improve rapidly and become exceedingly good. The old pastures rarely require resting during the summer beyond a short period for sweetening, when the cattle are removed to market. In the best-managed districts the clots are regularly gathered, and the weeds kept down which, assists materially in keeping an even pasture; thus, when properly cultivated, they run less to bunches or "fog" than others. The general herbage is of an even and sweet character, arising from the cool and healthy subsoil. About one sheep per acre, with nearly an ox, is the general run of stock placed upon them in the commencement: care being taken to have the sheep fat and removed to market soon after clip-day. The bottom herbage then advances, and improves the pasture for the cattle. When these cattle are removed, the fields are again supplied from the inferior pastures, and in many instances about two sheep per acre are placed upon them, with a proper quantity of cattle, all of which, by the end of the season, are sufficiently fat for market. The store or winter beasts then follow to clean up, and are allowed to remain according to the situation and local circumstances.

These pastures carry at least two sheep per acre during the winter months, but do not make them so fresh in condition as the warmer soils.

It is somewhat remarkable to state that we rarely if ever find these soils assisted in any way by artificial means beyond the return of the manure that may have been gathered during the summer months: hence the value that is usually placed upon these old pastures, they being exceedingly productive and nearly free of expense, both as regards manual labour and artificial aid.

The rich pastures resting upon a deep and healthy subsoil are found to produce more bulk of grass than any other; but in some cases the grass is wild and coarse in its growth, as, from the richness of soil and immense range the roots enjoy when in search of their food, a corresponding growth or rapid increase is produced in the foliage. The rich pastures or soils are found most in the inland and warmer districts, and are truly designated in those localities the fine old "ox-lands," which are much sought after by the leading or principal graziers, as they are known to fatten an ox or sheep of any size, and, in many instances, regardless of quality. It is truly difficult to define any plan of management in regard to these pastures, they being rarely cleared or rested the whole year round; it is found requisite to continue the winter-beast in the pastures up to the latest period, to effect a clearance of the "old fog" left over from the preceding summer. In such cases they are frequently allowed to remain throughout, and others are added to them as the grazing season advances. In some districts the practice is to winter lambs upon these pastures, particularly in Leicestershire; and they are never removed until fat for the butcher—about the end of the following August or beginning of September. In other districts, however, either shearlings or barren ewes are placed upon them, and drawn off early in the season—a desirable process.

These pastures, from their quick growth and strength of herbage, are generally stocked with oxen of a good age; some occupiers in the western districts prefer heifer or cow stock for supplying the manufacturing population.

In either case a second run is provided about the middle of the summer, at which period many graziers prefer to "skim" these pastures over, thereby checking the rough bunches and grasses that predominate, and giving a more even pasture to the succeeding cattle.

The winter management is that of the soils before treated on; cattle and sheep in sufficient number being placed upon them to effect a proper clearance of the rough grass previous to the 1st of May. The cattle depastured upon these soils during the winter months rarely receive any extra food, except in extreme weather; as they are found, when allowed fodder, to be more restless and less inclined to effect a clearance of the "rough grass," for which purpose they are expressly provided, and may (under the circumstances) be said to cost nothing for wintering. This class of animals are fatted or cleared off for the London market about the succeeding Michaelmas, and are generally termed the Leicesters, as they are principally used in that and the surrounding districts. In those districts where less shelter is found and part of the occupation is arable, it is customary to allow the cattle to go out during the day to clean up the nearest pastures and return to the yards at night. Nothing occurs in their management different from that of the pre-

ceding pastures; the grasses are really indigenous productions, formed upon an accumulated mass of vegetable mould, and are of themselves sufficiently rich without the aid of manures: they require, however, to be kept in proper bounds, that every remaining blade be allowed to see the sun at least once a year, otherwise an accumulation of rough grass takes place, and the herbage becomes degenerated, changed in character, and less nutritive in quality. Hence we often hear parties remark that certain fields have lost their feeding qualities: this results from the fact that, while the annual produce of the soil is chiefly exported in the shape of beef, mutton, &c., and no return of manure is made to the soil, the grasses themselves have been allowed to be choked with superfluous rubbish, and not even permitted to adjust themselves according to "Nature's course." The importance of assisting Nature, rather than marring her works, is forcibly shown in this.

The *second* class, or sheep-land, consists of those soils and pastures which are generally termed "middle descriptions of grass lands," and are found to abound more or less in nearly every district in England. They consist chiefly of two classes of soils, viz., the dry soils, such as rest upon dry or open subsoils, and those resting upon cold or moderate subsoils.

The *dry* soils comprise those pastures which are more rapid and early in their produce during the spring months, thus proving exceedingly valuable to the occupier, it being a great relief to have a portion of early pasture-land.

These pastures are usually cleared at an early period, and in some instances even before Christmas, in order they may prove the more valuable in the spring. As the grasses produced by these descriptions of soils are of a *fine* character, it is thought best to allow them to get a good *cover* previously to placing the whole summer stock upon them. By this process they are less liable to be burned or parched up, carry more sheep per acre, make a better return, and the lands are more improved, than when stocked at an early period.

Young or second-class beasts are added in proportion to the character of the herbage, as some soils throw up more bents or seed-shoots than others. What is termed the full stock is allowed to remain upon these lands until the first class, or ox-land, is cleared and ready to receive a portion of them; after which thinning, the pasture improves materially, and the remaining stock do exceedingly well. From the dry and healthy character of these lands they are depastured with sheep during the winter in preference to cattle, the latter being entirely removed in October. The sheep are then found to enjoy themselves, and get exceedingly forward in condition, and in many instances they are sold fat at the end of the season, or removed to the turnip lands. It is the custom to clean up the pastures about Christmas. It rarely occurs that any artificial aid is given to these soils beyond the sheep manure, which upon some soils is considerable, and certainly adds much to the improvement of the herbage. Upon the more shallow soils a dressing of soil and lime is given by the best managers, when cleaned up for a pasture—the weeds being removed as they occur during the summer months.

From the peculiar nature of these soils they are both easy and cheap in their management, the principal point being that a proper amount of herbage should accumulate in the spring before the full stock is placed upon them, as these soils are more dependent upon seasons than any other class.

The pastures which rest upon cold or moderate subsoils are considered productive summer pastures for sheep and cattle, a preference being given to such as are found upon healthy clay bottoms. Their management is widely different from that of the dry soils; but when combined in one occupation, they assist each other, and become more profitable.

From the cool temperature of these soils, they are rather backward in throwing up their spring-shoots; but when well started, they soon form a thick, green, nutritive herbage, especially on the clay subsoils when free from surplus water; but in every case where water exists the pastures are both thin and backward—in fact, of little value; hence the importance of draining. From the thickness of herbage produced by the best of these soils, little fear is felt as to their being overstocked with sheep at the commencement of the season; they also require heavily stocking with cattle for a time, to keep the seed-shoots down, in order that the pasture may wear an even herbage—the all-important point in the culture of these pastures. As the season advances, the sheep (being feeding stock) are thinned out from time to time for market, by which means the pastures are regulated to the greatest nicety. The cattle are drafted to the ox-lands as required.

Some of the more moderate soils are grazed with store-stock, according to their produce. The best pastures are heavily stocked with sheep throughout the winter, and to a late period in the spring. In many districts, when depastured with feeding sheep, the animals are allowed a few beans—a plan by which they are certain to be ready for market at an early period. This practice I consider a good one.

In the best districts the good pastures are kept clean throughout the season, care being taken to watch the outfalls and master-drains, as well as to place-in short drains at any part of the field where

they may be required to complete the general drainage. By this kind of attention the annual outlay is kept at a moderate rate, and the pastures are gradually improved. By the constant close or sheep feeding of these pastures, a great deposit of valuable manure is made upon them; the surface soil becomes immensely improved, not only by the deposit, but by means of the working of the various insects in search of food, by whose aid the manure is let down, and the surface-soil thrown up; the deposit being thus mixed and the vegetable matter decomposed. It is quite certain that a more suitable dressing or stimulating food could not be prepared for these grasses; and as practice daily shows the importance of close feeding these pastures, I do not apprehend that the practice I have detailed can be improved, especially upon the deep even class of soils. In situations, however, where veins of thin or more moderate soils intervene, it is desirable to give such portions a thin dressing of manure or compost.

It is especially worthy of remark that the best thick-bottomed sheep pastures are found in the marshy districts, such as have at some former period been rescued from the sea, or are found within reach of the salt-water spray, upon which sheep are found to be exceedingly healthy; a fact indicating the importance of salt, both as a fertilizer for pasture-lands and a promoter of health as regards cattle and sheep.

The downs and inferior pastures form two distinct subjects. The downs include the dry and many hilly pastures. The inferior pastures may be found in every locality, and they vary in their character even from field to field.

The downs or sheep-walks in the south and west of England are thin of soil, and usually rest upon an inert subsoil: consequently they are difficult to improve by profitable means, and are allowed to remain in their natural state. Large tracts of these lands are held with arable farms as sheep-walks; they are treated adversely, being depastured with sheep during the day; the animals collect the mixed produce, and are conveyed to the fold at night, there to deposit the produce of the heath, for the improvement of those soils that have been taken in for the purposes of growing corn, and the general class of downs, left to chance, producing more or less, according to the moisture of the season. Some portions of the better or deeper soils have been ploughed up and renewed with the modern grasses. But this process is not found to answer, unless the soil be materially assisted or changed in character, as, when unimproved by stimulants during the transfer, they gradually return to their original state, and the indigenous grasses as soon preponderate.

The natural produce of the downs is of small bulk, but it is found both wholesome and palatable to sheep.

From the elevated position of the general class of downs, they are found particularly healthy, and valuable in connection with other occupations.

The *hilly* pastures are of two classes: the moderately elevated and low hills, which are rarely approached by the plough; and the high hills, which, from their acclivity and elevation, are necessarily appropriated to stock of a local character, and are found productive and useful in their order. The moderate or low hills (such as produce fine short herbage) are found more governable, and are for the most part depastured with sheep. At the base of these hills herbage is frequently found sufficiently rich for fattening sheep, or the breeding or rearing of them. Those hills of moderate acclivity with a sufficiency of soil are capable of great improvement, particularly where blocks of even ground are intermixed with them; in support of which I may refer to the marked results of those districts or farms on Exmoor, Somersetshire; which have been recently renewed by means of paring and burning the natural herbage, and then supplying lime to the soil previous to its being again laid down to grass. After the burning and liming have been completed, these lands have been prepared and sown with root crops, followed by oats, the grass-seeds being sown with them, or sown down without a crop of corn; in such case a little cole-seed might be mixed with it, which would afford excellent keeping for sheep in the autumn; the latter would, I think, be the better practice when the land is intended for permanent pasture. Such fields as have had the largest portion of lime given them are found to produce excellent roots, oats, and grass; and, when depastured a few years, make an excellent appearance and form a thick herbage, while those which have had a moderate supply of lime show the improvement only in a corresponding degree. Again (to show the value of lime), on such parts as have been renewed, and have received no lime, the grasses are gradually returning to their former indigenous character. In the absence of the process of renewal, much good has been effected on these native grasses by the application of a top-dressing of lime, thereby causing the modern grasses to spring up, and to a great extent eradicate the former occupants.

The aspect of pasture-lands in the hilly districts forms an important proof of the principle of *warmth*, as we find those lands sloping to the south, or receiving the rays of the sun more directly, to be influenced most in their productive or vegetating powers, while those hanging to the north are less productive and of a different character.

In fact, such is the importance of aspect, that we find on close observation that the natural grasses vary both in number and character. If a survey be taken round even a moderate hill, this will be evident; in fact, in no instance is the varied temperature of the soils more forcibly shown than in hilly districts. The pastures upon the southern aspects are found exceedingly useful, while those upon the northern sides frequently abound in rough sour grasses, in some instances scarcely worthy of occupation.

The *inferior* pastures, although numerous in their class and almost numberless in their character, may be treated under two heads, viz., the dry thin soils, and the cold or wet soils. Each is governed more or less by the nature of the subsoil, and other local difficulties it may have to contend with.

The inferior dry soils are those of a thin character, resting upon subsoils of a stony, rocky, or other dry formation. The improvement of these pastures, from their thin and frequently unprofitable nature, is very little attempted, particularly by temporary occupiers, or even those of an annual tenure. Those occupiers who have long leases, or have a guarantee from their landlords to be paid for unexhausted improvements, are found to be most active in the improvement of these soils: they bring them under arable culture for a time, and then lay them down to grass again for a period of years. The former class of occupiers are too frequently prevented by some covenant from carrying out these marked improvements; hence their indisposition to spend money upon an uncertain occupation, particularly to improve "inferior grass land." With uncertain tenure they should be treated as permanent improvements, and aided by the landlord. The manures or dressings applied to these pastures are numerous, care being taken to supply each character of soil or herbage with its required food, either in the shape of artificial manure or compost. It is not uncommon to throw over the pastures a small quantity of mixed clover and hay seeds, suitable to the soils. These pastures, from their thinness of soil, are improved most by dressings of compost, it being found advantageous to increase and mix the texture of the natural soil with that of a more opposite character—thus, surplus soil, scouring of ditches, banks, weeds of any kind, road-scrapings, clots, or even any rubbish, may be collected into a heap and mixed with lime, which quickly decomposes the collection, and, after a few turnings, forms an excellent compost to be applied about Chrtstmas, or when the pastures can be spared for such purpose. In the event of moss or other small weeds abounding in the pastures under improvement, a pair of harrows are found of infinite service in removing them. After this operation a small quantity of grass-seeds should be sown over the field (previously to the compost being applied), and by attention to the spreading and bushing the field the whole surface becomes apparently changed. After a short time has elapsed, the iron roller is applied with immense advantage: in fact, the heavy roller is an invaluable implement when freely applied to grass lands: instance those parts of a field that have been by various occupations pressed or carted upon more that the average parts of the field, and we find them producing a different class of grasses, much greener in their appearance and more nutritive in use; they are more eagerly sought after by every description of stock, and, while other parts of the field may be found to have "run away" in abundant seasons, these parts are always found fed down to the very roots.

This shows the importance of assimilating the managment of these pastures to those accidental, yet valuable, dictates—pressure and close feeding.

Again, in connection with these soils it is important to remark that, in every case where the soil has been by one cause or other increased and darkened in its appearance or character, if is found more productive and much earlier in its spring shoot; in fact, the grasses themselves have changed with the accumulation of this new matter.

In no instance is this process better shown in practice than by pointing to hedge-sides, corners, or other sheltered parts of a field which the cattle or sheep have frequented most; and on many of the first-class soils, such as the "ox-pastures," we find that, if care be not taken to check the accumulation, those parts of the field become wild and so coarse in their growth, that even oxen refuse to eat them after the first shoot has been taken off.

A variety of artificial manures as top-dressings or stimulants are used for improving these pastures, such as nitrate of soda, guano, lime, salt, bones, soot, &c.; but as the pastures neither throw up nor contain any amount of vegetable matter, a preference is given to a staple manure, or prepared compost, &c.

The draining of this description of soils is rarely attempted, for they are generally found resting upon stony or other porous subsoils. Yet we often find even pastures which are liable to be burned up improved by draining; the roots, having but little depth of earth to range in, become exhausted, as they refuse to enter the noxious substances contained in unhealthy subsoils. But, when properly drained, the rains that fall will gradually wash out the noxious matter, and the roots will follow to a great depth, and ultimately receive a more abundant and certain supply of food from the thus increased and improved depth of healthy soil. The more

profitable occupation of these soils or pastures is the transfer of the greater part of them to arable culture, whereby whole districts would be improved, and even a greater amount of beef and mutton supplied from them (in addition to the corn produced) for an increasing population, as also supplying the agricultural labourer and artisan with additional employment. Hence the connection of this subject with the great chain of rural economy, as also advancing to the yet distant but approaching standard of "commercial principles" in regard to the general tenure and culture of the soil.

The folding of sheep upon dry soils under improvement is found to answer remarkably well, and its effects are visible for many years: it darkens the soil, as well as confers a stimulating dressing. The result is particularly visible on those situations which sheep select for their lair during the night—the dry warm banks of parts of the field that have been casually drained. Liquid manure, or compost that has been prepared with it, has also a good and similar effect upon pasture lands. In fact, any dressings that stimulate the growth of the herbage or decompose the vegetable matter have the effect of expanding and increasing the surface-soil to a great extent. This is very perceptible on stony soils, as the stones gradually disappear and become enveloped by the rising soil accumulated by the numerous earth-worms and other minute insects thus set to work, and which bring up their burden of fine fertilizing earth, particularly when pastures are rested or cleared for a few weeks, after being heavily depastured with sheep. The heavy roller then admirably completes the work, and the improvement becomes fixed and permanent, provided care be taken to repeat the dressings for a few years.

The soil under this process becomes closely assimilated to the rich soils that have been naturally formed or increased through former ages, and which are now properly designated the "rich old pasture lands;" it being evidently a work of time to produce those acquired rich and fertilizing properties.

The *cold or wet* inferior soils are those resting upon subsoils of that nature, which have as yet been more or less neglected, as they hold out but little encouragement to the tenant occupier to improve them; still, by the application of skill and capital, even in these soils important changes are effected. In the general management of these pastures it is usual, when unimproved, to stock them with young beasts or horses, and but rarely with sheep, as their herbage is of so coarse a nature as to forbid sheep being fed upon them. Those that have been drained are found improved, but in due proportion to the plan and extent of draining performed.

Where shallow drains have been put in, the herbage is but slightly changed, as many of the aquatic grasses still remain and find support in the yet reachable watery subsoil, while those that have been properly drained at a greater depth show the good effects by the changed appearance, which by close feeding with cattle and horses become useful store land, particularly when attention has been paid to give them a top-dressing of lime, salt, bones, or other artificial manures in the spring. By such means the grasses become improved and sweetened, and are eaten up much closer, which is the great desideratum to effect a change in the herbage of any pasture under improvement.

In low swampy situations, a few really deep drains, laid round or across the fields according to situation, have frequently had the effect of not only laying the particular field dry, but many of the surrounding ponds; in fact, the worse the land the deeper the drains should be. Yet the remark that land has been over-drained is familiar in many districts; hence it is inferred that the pastures have been spoiled. Now this inference is inapplicable to the draining, the soil being changed for the better! The food of the aquatic grasses having been removed, they become dry and inactive: it is true the existing grasses become more like stubble than grass. But having so far changed the soil, it is equally necessary to change the herbage, by other agents—such as suitable top-dressings to sweeten and increase the herbage, that the truly important branch of close feeding may be effected. The pasture then becomes gradually improved, and nature supplies her indigenous grasses, suitable to the then improved character of the soil, as the aquatic or other spurious grasses, in the absence of their food, decline.

Those grasses found upon moderately good surface soils resting upon subsoils that have a coat of peat earth upon them, between the lower strata of clay and surface soil, are slow in their improvement; although ranging in good districts and surrounded with excellent cropping land, they carry but little stock, and prove an unprofitable occupation: such pastures require renewing, whereby the more modern grasses would be sown, and consequently meet the changed composition of the soil. After this each field would be doubled in value for grazing purposes, but of still greater value if kept under the plough.

From the apparent slow progress made in the improvement of the general class of inferior pastures by the tenants, it is evidently a permanent or landlord's question. Possibly the better plan for both is to meet halfway, the landlord finding materials, and the tenant performing the workmanship. A sound scale for general improvements

might indeed be adopted, and "two blades of grass might be raised where only one grew before" —the one by the landlord and the other by the tenant.

The lands laid down to artificial grass in connection with the arable culture of a farm, for one, two, or more years, are also worthy of notice, as they show the principle by which general improvements may be effected, either with a view to rest the arable lands for a time, or to remain for permanent pasture. In the latter case it is alike important and interesting to notice the effects of nature in connection with the food of these grasses: we find that when the soil has not been properly prepared, or the modern grasses properly selected, or the soil has been exhausted of the particular food suitable to the selected grasses, the indigenous ones spring up; hence the slow return from these newly-formed pastures during the period of conversion, or while they are adjusting themselves, "under Nature's care," to the soil and situation. They gradually form a thick sward of rich and nourishing herbage upon well-cultivated soils, but are of moderate worth when sown upon neglected or worn-out arable lands: the mere laying down to grass will not make good pasture lands, however long they may remain; of this the commons, heaths, downs, &c., afford sufficient proof. Lands laid down to pasture, with or without a corn crop, are known in practice to form separate or distinct results, particularly in after years. Those laid down in corn crops are a considerable time in forming good pasture lands, while those laid down without a crop of corn (when the soil is properly prepared) become at once exceedingly rich and fertile, and represent an improved temperature.

Being enabled to absorb more of the sun's warmth, they continue to have a very perceptible lead of those grown in the corn crop, by which the soil to a great extent has been also exhausted; the grasses are consequently less luxuriant in their growth. This is an important feature when it is considered that the young grasses (clover in particular) derive support from the atmosphere in due proportion to their strength of foliage or growth produced by the food supplied them in the soil; hence the herbage to be consumed and the growth of the roots are found to progress in a corresponding ratio: yet, however striking these results may appear, they form but another proof of the importance of good cultivation blended with a proper knowledge of natural tendencies.

Inoculation, or the transplanting of turf, is another mode by which some tillage lands are laid down to permanent pasture: it is best adapted to such light soils as are not naturally of a grassy nature, as when the soil has been well cleaned of its weeds during a whole summer fallow, and nicely prepared to receive the turf (which should be cut from good clean pasture lands), the grasses and their roots, being ready formed on a good soil, will stand a better chance of success, as they also receive a considerable proportion of their food from the atmosphere.

When turf from inferior pastures is selected for this operation, it rarely answers; it would be far better to sow the land down with mixed seeds, suitable to the soil, than to run the risk of a failure. The autumn is the season preferred for transplanting turf. The tillage is by that period properly prepared and the moist season better adapted to the cutting and planting of the turf, and sufficient time is allowed for establishing the roots previous to the dry or hot weather setting in. The process is certainly rather tedious, though it is simple when understood. The arable land having been beautifully prepared and made even, the turf is then supplied from the selected pasture, which, if intended for future arable culture, is all removed by the operation of a common paring plough at the depth of about 2½ inches, and about 8 inches wide; it is then (by various means) cut into pieces of about 3 or 4 inches square, and planted from 6 to 9 inches apart, according to the quality of the soil. Care is taken to plant the grassy side uppermost, and to press it well into the ground: it is a good system to place the foot upon it in succession, taking care to have no more turf cut each day than can be planted before night. If the transplanted turf be deficient in any one or more favourite grasses, they should be sown over the new pasture in April. Particular attention is required in rolling these pastures at proper intervals, and when the ground is in proper temper (between wet and dry), which will cause the plants to extend themselves along the surface rather than to rise in tufts, as otherwise they would be apt to do. No stock should be placed upon them until they have shed their seeds; indeed, the pasturing should be very moderate until the mother grass plants and their young progeny have united and formed a compact turf. It is found that one acre of pasture land, prepared upon the plan previously named, will inoculate nine of arable if judiciously performed. The expense of the operation alone is about 50s. per statute acre. Should the field whence the turf has been taken be required to remain in permanent pasture, only a portion of the turf is removed in shreds by the plough, leaving a sufficiency of turf for again uniting to form a perfect sward or pasture. Some adopt the plan of improving old pasture lands by giving them a dressing of compost during the spring months, and then dibble in a few tares, and at the same time sow a small quantity of mixed clover and grass seeds, by which means the sheep in feeding off the tares fasten the young grasses, and the pasture becomes renewed and improved.

The plan of partially inoculating old grass lands is practised by some, and to good effect: the process is performed by raising the natural turf, and inserting other selected turf from the best lands, which may be performed to any extent according to local circumstances.

The *meadow* ground, or that portion of the grass lands usually under hay culture, differs materially in its management, and is very varied in its character, as regards soil, situation, and local habits, and claims to be treated under their separate heads, viz., the meadow, the upland meadow, and the water meadow. In nearly every district, by far the greater proportion of the perennial grass lands is the work of nature, and it is only of recent date that much attention has been paid to their management. But since the improved state of agriculture and the breeding and rearing of cattle have become general, their winter food has become in request and valuable; hence the study to increase it by artificial herbage on the arable lands, and by the improved management of the spontaneous productions of the grass or meadow lands.

Upon farms of any size it is customary to select a suitable portion of the occupation for meadow lands, which are kept under grass for the purpose of affording the necessary supply of hay, but are depastured at other seasons of the year, according to the occupation: those fields selected for meadow lands are usually more moist or cool in their character than those reserved for permanent pasture, as they are found to produce more hay and throw up a greater amount of edish or after-grass.

The meadows that are naturally well situated in the bottoms of valleys, or adjoining watercourses, are considered by far the most valuable, and are eagerly sought after; hence, in taking a farm, the general question—"Are there any good meadows?"

They produce an abundance of hay, which is usually carried off to the homestead, and adds materially to the general source of manure for other lands; while, from their soil being deep, and commonly alluvial, (owing to the great deposit of sediment left by the water passing over them, or washed down upon them from the adjoining eminences,) they require no return in the shape of manure. Care should be taken, however, not to allow the stream to pass over them at too late a period, if it can be possibly avoided; to clear them of all superfluous aquatics; to check the springs frequently arising at the hill sides; to keep open a regular supply of grips or watercourses for the quick clearance of the water when required, and that the whole cleaning up, mowing, and pasturing be so adjusted, as to keep the meadows in a good and profitable state without the aid of manure.

The *upland* meadows are various in their character, being selected or formed according to the varied localities: the soil of some is exceedingly good, while others are mown from an impression that they are but of little value, and therefore cannot be worse. The culture of these meadows is necessarily more expensive than that of the valleys, as they require much attention and regular supplies of manure, according to their character. The better soils are kept up to a regular standard of production by the constant manurings or top-dressings they receive, which form at length a thin black stratum among the roots of the grass, and become certain in their annual supply of nutritive produce. The irregular surface of upland meadows is apt to contain springs, which require attention; while other fields of a lower level require careful draining throughout, to eradicate the coarser grasses. Moss is a very common enemy to the dry upland meadows; it is checked by harrowing and by a good supply of manure, the one process obstructing the onward progress or the moss, the other stimulating the grasses to overcome or suffocate their enemy. It is most known upon poor soils, but rarely upon rich pastures. Rolling, and top-dressings of lime and salt, are frequently used for destroying it. Ant-hills occur more upon these soils than upon others, though they are quickly checked by throwing or gelding, if operated upon in time. On those fields which are most subject to them, the heavy iron roller be run over them at least once a year: rolling, however, may be carried too far, and the surface-soil become as it were set or hide-bound; in such case harrowing is adopted with success, particularly when applied previous to a manuring.

In the midland counties, upon such farms as have only a small proportion of arable land, it is the practice to eat the hay upon the land (or adjacent fields) where it grew: in such cases, we find on retentive soils, that when depastured with cattle or horses in wet seasons, the grass receives much injury from their feet, and becomes what is usually termed poached. Thus, when filled with water, the herbage is destroyed, and the ground becomes chilled and injured around it. Hence it is desirable to allow such meadows to remain until the dry spring months set in, before their produce is consumed. Excess of rolling upon such soils, when in a wet or moist state, produces similar effects, but of course in another shape.

The manures or dressings applied to the upland meadows are various, both in regard to their qualities and time of application. Upon this subject a diversity of opinion prevails amongst even the best managers. In the neighbourhood of large towns the dressings are usually laid on about Michaelmas, while the land is sufficiently dry to carry the

carts, and when, as they have it, the season has so far advanced as not to exhale the volatile parts of the dung.

Some prefer its application directly after mowing, which is said to be the "good old time;" while others lay it on at times when the meadows are closed for hay, and when they can best be spared. I believe either plan to be good, provided the meadows get a good dressing once a year. Well-rotted dung or compost is preferred. In some districts it is the practice to mow two fields alternately, by which means parties state that the one year's depasturing or eatage sufficiently recovers the land for mowing again the following year without the aid of manure.

Water-meadows are those artificially formed for the purpose of irrigation: by this means many hitherto neglected districts have become exceedingly valuable; they serve as the key of dependence to whole occupations when once formed. The first outlay in their formation is the difficulty, it being found too formidable for the yearly tenant; and in many instances the landlords object also to what they term an unnecessary expenditure; they are more commonly performed by occupiers under long leases, or by arrangement for the owners to receive an increased rent or per-centage for the capital so invested. The modern and truly valuable water-meadows are found on the estate of the Duke of Portland, at Clipstone Park, Notts, which are so ably described by Mr. Denison in the first volume of the Society's Journal. In facts, parties desirous to lay out new, or improve old water-meadows, should visit these in order to become well grounded in their general management, as also to witness their real value.

The watering of meadows for the purpose of promoting vegetation was among the pursuits of the ancient cultivators of the then existing pasture lands. We find on record the following opinion of Cato—"As much as in your power make water-meadows;" and Columella says—"Land that is naturally rich and in good heart does not need to have water set over it, because the hay produced in a juicy soil is better than that excited by water; yet when the poverty of a soil requires it, however, water may be set over it." Again, from the observations of other authors, it is fair to infer that water-meadows were numerous in former ages, from the want of good herbage for their cattle; while since the increased practice of sowing artificial grasses, and the general improved culture, they have apparently been less in demand. It is important to notice, that even the coarser herbage of boggy meadows is by this process improved, as also that those of the cold and meagre soils are accelerated and increased by it, or supplanted by a verdant surface of improved grasses. Eventually, as improvements roll on in the other branches of agriculture, the forming of water-meadows must become a subject of importance, particularly when considered in connection with the breeding and feeding of stock, which must ere long from necessity (as the population of this country increases) become more universal. It is consequently essential that there should be a bountiful and cheap supply of grasses of varied characters to meet the exigencies of theage.

The soils best calculated for water-meadows are those of a gravelly friable nature, as the effect is immediate and more powerful than upon any other descriptions of soil. Those soils which produce the coarser grasses require considerably more water to effect a change in their character than the former, as a stream capable of watering fifteen or twenty acres of light dry land would be found far too small for even half the quantity of cold clayey ground abounding in coarser grasses: it is, in fact, desirable to form a body of water for the purpose of floating these soils to produce much benefit. Yet there are only a few soils to which irrigation may not be advantageously applied. Care should be taken to have the wet soils properly under-drained before the process of irrigation takes place, and that they be laid perfectly dry of the surface water when the business of floating terminates. The season for floating is that of winter, and not summer, as parties unacquainted with the process have too frequently supposed. The lands that permit of the greatest return are such as lie in low situations, on the borders of brooks, streams, rivers, or in sloping directions on the hill sides. The advantages to be derived from watering lands must, in a material degree, depend on the climate: most grasses vegetate in a temperature of 33 to 34 degrees. Still, as the most luxuriant pastures in every clime are those found upon lands naturally watered, it is best to imitate nature in cold as well as in warm countries. Land, when once improved by irrigation, is placed in a state of perpetual fertility without the aid of manure or any other material expense. It fact it becomes so productive as to yield by far the largest bulk of hay, besides affording an abundance of support to the ewes and lambs in the vacant spring months, and a liberal supply of after-grass for the cattle in the autumn months. This is, in fact, furnishing extra food for animals, and converting it into manure to be supplied to other lands, thus augmenting in a compound degree that great source of fertility—manure.

So varied are the opinions of scientific men as to the qualities of the different waters most applicable to this purpose, that it would ill become me to offer an opinion relative to the chemical properties most beneficial; yet from experience I draw the conclu-

sion that those waters which contain the greatest amount of food for the grasses must be the best; hence irrigation by liquid manure, or the sewerage of large towns, must be vastly more beneficial than waters free from all kind of impurity. This question is worthy of great consideration, by which means crops of grass would follow each other throughout the season, and be productive of immense results.

The expense of irrigation varies according to the situation of the land or nature of the work to be performed. Where the *catch* meadow system can be adopted, the expense is moderate, much less water is required, and in some situations the plan answers as well as flat-flooding. The expense of bed-work, &c., in the formation of the other system, varies very considerably: in some instances the outlay is enormous. Some persons object to irrigation from an idea that it makes a neighbourhood unhealthy; but as the water is continually kept in motion, the supposition is unfounded. It is also stated that though the produce may be increased, it becomes in a few years of so coarse a nature that cattle refuse to eat it. Now this complaint cannot be applicable to those meadows which have been skilfully prepared and properly managed. When rushes or aquatic plants make their appearance, it is a sure sign that the meadow lies too flat, or that it is not sufficiently under-drained.

The detail of all the minor arrangements, or general process of irrigation, would prove far too long, and possibly too tedious a subject to occupy more space in this essay.

Warping in moderation is carried out with success upon some grass lands, but it is most commonly adopted upon arable lands; in either case it can be only successfully carried out upon those lands which approach the borders of large rivers into which the sea tide flows, or where floods containing alluvial matter in a state of suspension are frequent. The effect of warping is widely different in practice to that of irrigation. In the latter case the improvement is effected by water; while that of warping is effected by a deposit of mud, or by the soil being increased. The season for warping is during the latter summer months, usually commencing at the end of July. This season of the year is preferred, as the land returns quicker to its former dryness; and besides, the tides are less mixed with fresh water, and are consequently found more effectual in their deposit.

Hay-making (in connexion with the meadow lands) forms rather an important feature, and is attended with much anxiety, as no crop is more tedious to harvest, or repays better the extra care or pains bestowed upon it. It is admitted, and daily seen in practice during the season, that the further you travel southward, the better and more early you find the operations of hay-making; whereas the further you travel northward, or into the cooler districts, the less attention is paid to it: this is perceptible to the stranger as he travels through the country from one extremity to the other.

The making of hay has certainly for a length of time been carried to great perfection in the south, more particularly in the neighbourhood of London, as their harvest depends upon the well securing of their hay and clover crop. Previous to the introduction of the "hay-maker," their established process was to perform every operation by manual labour. When the season has really well commenced, a calculation is made as to the required number of hands to carry on every department effectually, each person being provided, according to a commendable practice, with his own implements. The best or more accustomed mowers are selected for this operation, in proportion to the grass to be mown: the remaining forces are adjusted according to their strength or merit to suit the various occupations; and all are expected to retain their allotted stations during the season. The mowers perform their task by the acre; the hay-makers are usually paid by the day. In forming a calculation of the required hands, it is found that an average of five (boys, women, and men) to each mower is a proper proportion, and that the work progresses in a corresponding ratio, provided the weather permits.

First day.—The mowers having commenced in the early part of the morning, the grass mown before 9 o'clock is carefully "tedded" out over every portion of the ground; and if time allow, it is moved again previous to 1 o'clock; after this it is "hacked" into small rows, the haymakers following each other; when this is accomplished, they return to the early part, and place it in small "grass cocks."

Second day.—The first operation of the morning is the "tedding" of all the grass mown after 9 o'clock the first day, and that mown previously to nine on the second day; after which the next stage is to shake out the "grass cocks" (made the previous day) into small rows, or, in some instances, into round patches; in either case the spare ground is kept raked, and the hay moved once or twice previously to dinner-time, the early process adopted on the first day being also carried on in due succession. After dinner the more forward hay is raked into small double "win-rows," then the next stage or portion is advanced as on the first day by "hacking;" after which the hay-makers return to the forward hay, and place it in moderate cocks, again returning to the "hacks," and leaving them as before in small "grass cocks."

Third day.—The process of "tedding" again takes place in the early part of the morning, and every other order, as practised on the two preceding days, follows in proper and due succession; the hay most forward now requires nice attention, and is managed according to the appearance of the weather; if fine and warm, it is again shaken out into round patches, or, if a heavy crop, is usually strewed into "win-rows," and again moved over previous to dinner or 1 o'clock: after these arrangements are made for carrying—a period of much anxiety. As every operation to be performed in due succession is now in full practice, and considerable judgment is required to keep all hands going on at a proper and profitable rate, a man of energy will realize the old adage, and "make hay while the sun shines;" should the weather prove cloudy, or otherwise, the principal attention and time is necessary to secure those portions under the later processes or stages.

Fourth day.—Nothing fresh occurs on this or the succeeding days beyond the plans carried out on the third day; in fact, at this stage of the proceedings every movement is in accordance with the appearance of the weather. Care is taken to keep the hay in cock, or near together; the land is well raked, and there should be by no means a preponderance of mowers, for it is very unwise to have more hay down at any one period than can be managed upon the established process. Since the introduction of the hay-maker this implement has partially superseded manual labour, and supplied the place of a considerable number of hands: it expedites the work in a remarkable degree, and at some periods of the hay season is almost invaluable.

Nevertheless, great care is required in using the hay-maker in wet or damp seasons, the hay being ound to injure more rapidly after it has been opened to that remarkable degree attained by this simple yet efficient implement. The hay-stacks in the metropolitan district are neatly formed, trimmed, and finished by thatching, which is quickly accomplished after the ricks are completed. The more general process of hay-making, as we gradually approach northward, is of a less attentive order, arising either from a want of system or of a proper number of hands, or from an apparent desire to get in the hay cheap: this may possibly arise from the absence of the southern stimulant—a good market. The general practice is to consume it upon the farm. Their early management is to allow the grass to remain two or three days before it is touched; it is then turned over in the "swarth," and the following day it is thrown into "win-rows," and possibly cocked up at night, as time may allow; it is then carried next day, which completes the apparently cheap system: after which it frequently happens that the stacks are raked down and remain until a leisure time occurs (in some instances until after harvest) for completing and thatching. Thus, in the northern districts, abundance is actually the bane of attention.

The cheapest way to get hay, and to insure the greatest value out again, is to harvest it quick by a sufficiency of labour, and not to allow it to be made by the sun at the risk of every cloud. Such hay-makers rarely or never have good weather for their hay-time, but are more general in the use of salt as a sweetener of their hay, by the aid of which, it is stated, the cattle relish even their worst hay. It is rare, however, that we hear of its use among the best hay-makers, it being their pride not to require it.

The consumption of after-grass varies but slightly (with the exception of its being occasionally mown a second time for hay) in the neighbourhood of London and other populous towns; it is generally fed off on firm dry lands by cattle, after it has been reserved for them for a few weeks. The cattle are succeeded by sheep and other store cattle. This is also the practice on many of the upland meadows, while some occupiers prefer to stock them directly after the scythe with sheep and young beasts; by this means they more quickly establish a bottom to the pasture. In such case these parties generally lay on their manure or compost at this season—a second certain aid in advance of the pasture effecting a speedy recovery after mowing: in the former case all chance of seeing the bottom-grass is given up until the succeeding spring, when, if again mown, it adds to the accumulating injury sustained; and these meadows eventually become worn out by mowing, and consequently much reduced in value. Hence it follows that lands are better when mown alternately with others, as they recover themselves during the year they are depastured, and then require less manure. It is quite certain (the result of practice) that all lands which have been mown require extra close feeding to subdue the stubble formed by mowing, and to cause the natural grasses to resume their former habit. The after-grass upon the cool or marshy meadows is widely different from the upland meadows, as their produce is of a coarse character, and not to be injured by mowing, but rather accelerated; yet if not eaten down, as required by the former, the grasses gradually get sour and coarser in their herbage. Close feeding at least once a year is essential to all grasses.

The *eradication of weeds*, such as the common thistle, the large or spud thistle, nettles, rushes, hassocks, and moss, is a point deserving much attention.

In cleaning land of the common thistle, which

abounds to excess in some localities, one of two certain modes is adopted by the best managers, according to the custom of the country. One plan is to have them drawn or pulled up by the roots twice a-year (the first time of going over them being about the end of May, the second time either just before harvest or directly after, according to local circumstances); the other plan is to spud or hoe them up below the knot or first joint of the thistle; by this means each thistle is destroyed. The time of performing this work is the same in both cases as that of drawing them.

Where disappointment occurs after spudding or hoeing, it is in consequence of the work of eradication not being done properly. Those thistles which have been cut off *above* the knot throw up an increased number of fresh shoots, while those cut below are certain to decay. Some farmers think it best to allow the thistles to remain until they are ready to flower, they are then mown and raked up and carried away; this, however, is by no means an example for good and clean husbandry, though it is argued that by this process the water gets into the crown of the thistle that remains, and it is thus destroyed.

On meadow lands which are annually mown it is a rare occurrence to find a thistle: this would apparently go to support the previous plan of allowing them to be full grown before mown. Yet in practice, where the plan is adopted on pasture lands we find them far from free, indeed but little changed, while the two former plans certainly effect a clearance.

The large or common spud-thistle is best eradicated by what is termed a "thistle-drawer"—an implement formed like the two first fingers, resting upon a round projection in the shape of the back of the hand, which is placed in a shaft of moderate length: the two leading prongs are placed on either side the thistle, and by a gentle wrench the thistle is removed entire from the ground. This may be done at such period as they may show themselves sufficiently large to be removed. These thistles may also be removed by placing a drop of sulphuric acid upon the crown.

Nettles are found most upon the rich or better pasture lands, and from their peculiar or determined growth are exceedingly troublesome to eradicate. The common practice is to knock them with a fork as they appear above the pastures, or to mow them at different periods; but neither plan is found to reduce them with any degree of certainty. The application of agricultural salt to them, at different periods of the season, has in many instances succeeded in removing them. Some persons raise the ground with a fork, and draw out the roots; which practice, if closely followed up through a few seasons, is certainly effective. The appearance of this weed upon pasture lands is considered a sure indication that they are improving, or are already rich soils, as they are rarely found growing upon inferior pastures.

Rushes are indigenous to wet soils, and are the certain guide to moist situations. They are to be removed by deep and effectual draining only, whereby the food of this aquatic plant is suspended or carried away: hence they are supplanted by modern grasses in due proportion to the change that has been effected in the character of the soil.

Hassocks may also be described as the production of cold or wet lands, for they are rarely found upon dry pastures, unless such pastures have recently been drained.

When they casually appear upon grass lands, they are removed by what is termed a "hassock-hoe," which takes them off just below the root, without making a deep hole in the surface, when well performed; they are then removed and burned for ashes, to be taken to the arable land, and the then vacant spots are sown with grass-seeds. When they appear to a considerable amount, which is too frequently the case in the midland counties, they are removed by this process in immense quantities, and carted into a heap, there to decay, and, being afterwards mixed with lime to form a compost, are again returned to the soil. They are also successfully removed by a short scythe, which is kept exceedingly sharp for the purpose; in such case the party applies the implement as near the bottom of the "hassock" as circumstances will permit, which is accomplished by a quick and determined stroke: by attention to a repetition of this plan they are effectually removed without disturbing the soil; the new grasses gradually close upon them, and eventually supersede them.

Some pastures, from being long neglected, become a mass of hassocks, as, from their strong coarse growth, no other grasses can endure or live with them upon these cold and neglected soils. In the improvement or redemption of these pastures it is usual to commence with draining of various depths, according to fancy; but in every instance we find them left even in a more difficult state when the water has been removed, as the pasture then assumes the character more of a stubble field than otherwise. Hence the local term, "this land has been over-drained;" which is true, as regards the then or former aquatic grasses inhabiting these soils, for they are left in a state of destitution, though they receive a sufficient support from the changed soil to linger on in their occupation, to the prejudice and exclusion of the new race of modern grasses, which it is intended should occupy their place. Close feeding with cattle and horses, and a plentiful sup-

ply of artificial manures to sweeten and increase the new herbage, is the surer way to effect the change. Yet some consider it the better plan to plough up such pastures, and, if required to be under grass, to renew them after one or two years' arable culture.

Moss is exceedingly troublesome upon some soils, particularly those of an inferior character; no plan is found so good as to harrow the pastures freely and frequently, and give them a good dressing of compost, for which purpose the following mixture has been found of great value, viz.: 20 bushels of salt to 40 bushels of lime is sufficient for one acre, and may be prepared in the following order:—1st. Place lime 6 inches thick, then place a layer of salt 2 inches thick upon it, repeat this plan three times, or until it reaches the height of 2 feet; then turn and mix it, and repeat the process at intervals of ten days for at least three times, when it will be ready for use, and may be applied either early in the spring, or at the close of the year; the above compost is valuable for any agricultural purpose, and is found to suit grass lands exceedingly well.

Ant-hills in some parts of the midland counties are both numerous and troublesome; there are two plans in practice for removing or destroying them —one is, to cut them entirely up, upon a level with the remainder of the pasture, and cart them into a heap to form a compost to be mixed with lime, and again returned in that shape to the pastures; the other plan is, to throw them, or what is provincially termed "gelding;" in such case a proper implement is provided for paring off the hill sides quite thin, which are rolled over in suitable pieces to the bottom, where they remain until the interior soil has been thrown out over the neighbouring clear land, when the grass is again returned, and arranged to supply the place of the previous hill; the soil thrown out is knocked at intervals, and eventually reduced by the bush harrow, and covered by the neighbouring grasses.

An exceedingly heavy roller is then passed over that portion of the field which has been under improvement, it being usual with the best graziers to remove a certain quantity every season. November is considered the best month for this operation, as the insects are then exposed to the winter elements, and the soil thrown out is more certain to be pulverized.

The *fences* upon grass lands form an important branch in their management: they are numerous and varied in their character, each district having its own style of fence or particular method of management. Upon the old enclosed grass lands in the midland counties are found troublesome hedges, many of which have stood the "test of ages;" but are now exceedingly thin or gappy, and are only made secure by post and rail fencing being placed in them where required; such fences, as also the more modern ones, have a protecting ditch on the outer side of the property, which in many cases decides whom the fence belongs to, when the occupations of two parties under the same landlord approach ach other.

The management of these hedges is simply to keep laying them down in the thin or weak places, or to lay them as rough as possible against the attack of the oxen depastured on the land. Upon the more recently enclosed pasture lands, the fences are found much better, and are usually managed by the common practice of laying them in a strong manner, care being taken to reverse the side to which they were inclined in the preceding cutting, the dike being cleansed at the same period.

In the formation of these fences, it has been customary to plant two rows of quick upon a moderate bank of earth, formed by the surplus soil thrown up form the ditch. In the after management, when full grown, it is usual to cut off one row entire, and from the fence or protecting hedge of the other; they are thus kept in a fruitful state; when cut the next time, they are reversed.

In many parts of Leicestershire it is the custom to place a single post and rail on the one side, and to keep the ditch well cleansed on the other.

The pastures in the marshland or lowland districts of the country are chiefly bounded by dikes from 10 to 12 feet wide, or by drains acting as public water-courses; in either case it not only gives the country a cold and vacant appearance, but is found exceedingly bleak for cattle, particularly when first removed to the early pastures in the spring months. In those districts situated near to large rivers or outfalls, the practice of taking in fresh water upon the farm is an invaluable one during the summer months, grips being made in various directions on the grass lands to admit of the water standing nearly level with the surface, which is preferable to irrigation at that season of the year.

Few cattle, however, are depastured upon these lands during the winter months; in some instances they are supplied with a stubble or straw stack, for the purpose of shelter. Where quick fences do occur in these districts, they are of a splendid character, being exceedingly thick and strong, and requiring no other attention than being kept within bounds. In some districts the plan is adopted of cleansing the hedge-bottoms and siding them up—thereby forming an efficient shelter for cattle during the cold months: these, when properly attended to, become very thick and matted, and are maintained at an easy rate. When gaps or thin places occur, they are stopped with suitable pales in place of the old plan of post and rails; this plan effects a saving of much land, and an excellent and certain shelter is provided for the stock—an important point in their management.

With regard to the dead fencing upon grass lands, such as gates, bullock and sheep pens, post and railing, &c., it is best in every case to place down good and seasoned wood, taking care that the new material shall be placed all together, and to mend with the inferior or surplus wood. When this system is adopted it is advantageous to apply paint of a cheap yet durable character to the gates and other fencing which may seem to require it, or will repay the outlay.—Journal of the Royal Agricultural Society.

TO THE SUBSCRIBERS OF THE FARMER'S MAGAZINE.

GENTLEMEN,—The importance which all attach to the securing as large a supply as possible of such of the necessaries of life as constitute the staple produce of our native soil, will be denied by no one whose opinion is of any value. It would, in these times, be a work of supererogation to adduce arguments to prove that security in his occupation is essential to enable the farmer to cultivate the land advantageously. This proposition is not now denied, even by the advocates of tenancy from year to year; the question, however, arises—Shall that security be real or nominal? Shall he have a "right" to enjoy and possess the fruits of his labour, or shall he be exposed to be dispossessed of them at the will of another? Where leases have been granted, the object has, in a great measure, been attained, as evidenced by the state of agriculture in Scotland, in Norfolk, and some other districts. Unhappily, however, first from the nature of the tenure by which a large number of owners hold their lands, and next from the desire evinced by a great proportion of them to retain a control over their tenantry, by far the greater part of the land in England is let on a yearly tenancy. To remedy this serious evil, in some few instances, but more especially in the county of Lincoln, a system has been adopted of giving "compensation for unexhausted improvements" to tenants upon quitting their farms. This system has been signally successful, having been mainly instrumental in placing Lincolnshire in the position it now occupies, that of being the best cultivated district in Great Britain. The good effects of this system being made known and understood, it was not surprising that it should enlist the earnest attention of Tenant Farmers. Having been discussed at the London Farmers' Club, and at various other local clubs, and having been agitated and kept before the public mainly through the columns of the *Mark Lane Express*, it was deemed advisable that application should be made to the legislature to extend that which may be called the Lincolnshire system of "compensation for unexhausted improvements," or, in other words, "Tenant-right," to the whole of the kingdom. Accordingly, Mr. Pusey, M.P. for Berkshire, brought in a Bill for that purpose in the session of 1847; which being opposed, was withdrawn. Undaunted, however, by a first defeat, he renewed his application to Parliament, and brought in another Bill in the last session. This Bill was referred to a select Committee, which Committee was empowered to take evidence on the agricultural customs of England, with a view to ascertain how far legislation might be practicable. The Committee agreed to a report, which, with the evidence, will now be placed in the hands of the subscribers to the "Farmer's Magazine;" the book published by order of the House of Commons, being out of print.

It is scarcely necessary to state that the Committee selected as witnesses those individuals whom they considered most competent to give sound practical information on the subject, and it is still more needless to remark that it would be impossible to examine upwards of fifty experienced farmers and land valuers upon such a subject without obtaining a mass of evidence which would contain most valuable information as to the cultivation of the land in all parts of the kingdom, and which would be both useful and interesting to the owners and occupiers of the soil of the United Kingdom, whatever views they may entertain upon the question at issue. Influenced by the desire which has ever actuated the proprietors of the "Farmer's Magazine," in placing all available information upon the most important and useful subjects before the agricultural class, they submit this report and *evidence in full* to their subscribers, with the conviction that when perused it will be admitted that they have not set too high an estimate on its value. I have the honour to remain, gentlemen, your most obedient servant,

W. SHAW, Editor of the "Farmer's Magazine."

TENANT-RIGHT.

REPORT FROM THE SELECT COMMITTEE ON AGRICULTURAL CUSTOMS, WITH THE EVIDENCE.

COMMITTEE.

Mr. Pusey	Mr. Hayter
Mr. Newdegate	Mr. Bouverie
Mr. Stafford	Sir Charles Lemon
Mr. Evelyn Denison	Mr. William Miles
Mr. Tatton Egerton	Mr. Colvile
The Earl of Arundel and Surrey	Mr. Burroughes
Mr. Henley	Mr. Henry Drummond
	Sir John Trollope.

Mr. Moody was subsequently added in place of Mr. Miles, and Mr. Sotheron in place of Mr. Henry Drummond.

REPORT.

THE SELECT COMMITTEE appointed to inquire into the Law and Custom of different parts of *England* and *Wales*, as between Outgoing and Incoming Tenants, and also as between Landlord and Tenant, in reference to Unexhausted Improvements or Deterioration of Land and Premises occupied for Agricultural Purposes, and who were empowered to report their Opinion, and Minutes of Evidence taken before them, to the House, have considered the Matters to them referred, and have agreed to the following REPORT:—

Your committee find

That different usages have long prevailed in different counties and districts of the country, conferring a claim to remuneration on an outgoing agricultural tenant, for various operations of husbandry, the ordinary return of which he is precluded from receiving, by the termination of his tenancy.

That this claim, which is called Tenant-Right, ordinarily extends to one or more of the following objects: to the crop which the outgoing tenant has sown and leaves in the ground; to remuneration, for the preparation of the soil for crops by tillage, for the straw, hay, and dung left on the farm, and for growing underwood.

That these local 'usages' are imported into leases or agreements for the letting and occupation of land between landlord and tenant, who are presumed to contract with reference to such usages, unless the terms of the agreement, expressly or by implication, negative such a presumption.

That in some parts of the country a modern usage has sprung up, which confers a right on the outgoing tenant to be reimbursed certain expenses, incurred by him in cultivation, other than those of ordinary husbandry, above referred to.

That among such expenses are included, the purchase of food for stock, the purchase of certain kinds of manure, and the draining, chalking, and marling of the soil; the result of all which outlays is, to effect an improvement of the soil, more or less lasting, and requiring more or less time to elapse before the increased productiveness, thereby obtained, reimburses the expenditure incurred.

That, except in the districts where this usage prevails, unless by express stipulation, the outgoing tenant cannot claim compensation for any of these improvements, however short may be the time between their completion and the termination of his occupancy.

That this modern usage appears to have grown out of improved and spirited systems of farming, involving a large outlay of capital, and to have been promoted by forms of agreement between landlord and tenant, whereby the former covenanted to give compensation for such outlay; which forms have been from time to time altered and enlarged, and are still extending themselves with the continued advancement of agriculture.

That these usages have gradually grown into general acceptance in certain districts until they have ultimately become recognised there as the custom of the country.

That, in practice, the compensation agreed to be paid by the landlord to the outgoing tenant, is paid by the incoming one.

That its amount is found by valuers, who ascertain the cost of the several improvements, spread that cost over a certain number of years, within which each kind of improvement respectively is supposed to repay itself, and then deduct from that number the time during which the tenant has enjoyed the benefit of the improvement.

That this wider system of compensation to the outgoing tenant seems to be highly beneficial to agriculture, to the landlord, and to the farmer; to lead to a great increase in the productiveness of the soil, and to extended employment of the rural population.

That the benefit arising from this system appears to be gradually becoming more extensively known and appreciated, and the system itself seems to be finding its way into other districts than those where it has hitherto been in force.

That the improvements above mentioned, which are very generally required throughout the country, in order to develop the full powers of the soil, are greatly promoted by this system of compensation, and therefore it is highly important that all difficulties should be removed which stand in the way of its extension by the voluntary act of landlord and tenants.

That any attempt to make its general introduction compulsory would be met by great practical difficulties, and your committee rely for the general and successful adoption of the system on mutual arrangements between landlords and tenants.

That it seems very desirable to your committee that estates under settlement should be endowed with every practicable privilege for their advantage which is attached to absolute property; and that persons having limited estates, in addition to the ordinary leasing powers generally conferred on them, should be enabled, under proper precautions, to enter into stipulations of the nature of those above referred to, which at present it appears they cannot do.

That the power to enter into such stipulations, binding on subsequent interests, might be advantageously made a general incident to leasing powers of land in settlement, by the aid of parliament; and also be conferred on persons having certain limited interests in land.

That the law with respect to things affixed to the freehold is different and more beneficial as regards those annexations made for the purposes of trade than those made for the purposes of agriculture, an outgoing tenant being permitted, in many cases, to remove the former when erected by himself, but not the latter.

That this distinction does not appear to be supported by any sound reason, and your committee are of opinion that the tenant's privilege of removal, with respect to fixtures set up for trading purposes, should be extended to those erected for agricultural objects.

3 July, 1848.

On the 1st of July, the committee proceeded to consider their report, and the chairman proposed the following resolutions:—

That various customs prevail immemorially in the compensation of outgoing tenants for acts of husbandry performed by such tenants in the ordinary course of farming, and for which the interruption of the tenancy has prevented them from receiving the usual return.

That such ancient tenant-rights vary in their nature and amount according to the time of quitting and the custom of the country; are more or less advantageous and certain in different counties; but could not conveniently be defined or altered by law.

That in Lincolnshire and some other districts a more recent custom prevails of paying the outgoing tenant, not for interrupted cultivation only, but also for uncompensated improvements, on the principle of assuming terms within which respectively the farmer may be regarded as having received back the amount of his outlay, with a profit thereon.

That the purchase of artificial food for stock upon arable farms does not ordinarily remunerate the farmer in the increased value of that stock, which would be fed at a loss but for the consequent improvement of the manure, and the profit thus arising in the larger yield of his corn.

That the purchase of artificial manure, a practice also of modern origin, is by the improved tenant-right recognised as a claim for compensation, to be spread over a short period of from two to four years.

That among more lasting improvements of the soil, (1) marling or claying, which renders light or fen land capable of producing good wheat, (2) chalking, which is equally necessary on many parts of the chalk hills themselves, and has been generally used on the Lincolnshire Wolds, but often produces no advantage until after three years, and (3) underdraining, if performed exclusively by the tenant, are regarded as entitling the tenant to longer terms of compensation.

That all these improvements not only increase the production of corn, but of meat also, in a yet higher

degree, by the growth of root crops; while the more durable improvements being performed chiefly by manual labour, afford extensive employment to the rural population.

That farm buildings frequently require expensive improvements for the purposes of improved husbandry.

That according to the evidence of practical farmers, the aforesaid improvements are more or less generally requisite throughout the country at large.

That although long leases might secure the tenant in making such improvements during the earlier period of his holding, land is generally held in England from year to year, or for short terms, while there appears no general inclination on the part either of landlords or tenants to fetter themselves by lengthening the term of the holding.

That although some of the more expensive improvements, as draining and building, are, if made at all, usually made by the landlords, a large number of the landlords cannot afford to make them, however necessary they may be.

That according to the legal evidence before the committee, owners with limited interests cannot grant tenant-right for improvement so as to bind their successors nor mortgagers, without notice to and apparently consent of the mortgagee, unless such covenants of compensation be supported by the custom of the country.

That such custom is slow in arising, as is shown among other evidence by a witness from Oxfordshire, in whose neighbourhood bones had been used as manure for 20 years, while his own was the first case of compensation for their application.

That such custom is uncertain and precarious during its growth, as appears clearly from the evidence respecting the custom of Kent, where the tenant is doubtful, after draining his farm, whether he will be able or not to obtain compensation therefor.

That such custom is also tardy in attaining validity; as, according to other evidence, existence for 20 years must be proved to render it binding.

That while tenant-right for improvements has been proved to work well by encouraging such improvements, some defects have been pointed out in the mode of awarding the compensation, as well as for tenant-right for acts of husbandry.

That in the opinion of competent witnesses the compensation should be awarded not as at present in a gross sum, but in a detailed account, open to examination by the parties concerned.

That whereas in the event of disagreement the two arbitrators now decide the appointment of the umpire by lot, it would be desirable to secure an impartial umpire.

That where compensation for improvement is granted to the outgoing tenant, compensation for foulness of land, cross-cropping, and dilapidation is equally due to his successor.

That according to the unanimous evidence of the witnesses, it is cheaper for an incoming tenant to pay reasonable compensation for improvements to his predecessor, than to enter upon a farm out of condition.

That it is desirable, as well for increasing the productiveness of the soil, as for the paramount object of widening the range of employment for the village labourer within his own neighbourhood, to render the principle of tenant-right for improvement general throughout England, by giving it prospectively the validity of a custom, subject however, as any other custom, to be dealt with and modified by mutual agreement between landlord and tenant.

Mr. BOUVERIE proposed other resolutions as follows:

That different usages have long prevailed in different counties and districts of the country, conferring a claim to remuneration on an outgoing agricultural tenant, for various operations of husbandry, the ordinary return of which he is precluded from receiving, by the termination of his tenancy.

That this claim, which is called tenant right, ordinarily extends to one or more of the following objects: to the crop which the outgoing tenant has sown and leaves in the ground; to remuneration for the preparation of the soil for crops by tillage; for the straw, hay, and dung left on the farm; and for growing underwood.

That these local usages are imported into agreements or leases for the letting and occupation of land between landlord and tenant, who are presumed to contract with reference to such usages, unless the terms of the agreement, expressly or by implication, negative such a presumption.

That in some parts of the country a modern usage has sprung up, which confers a right on the outgoing tenant to be reimbursed certain expenses incurred by him in cultivation, other than those of ordinary husbandry, above referred to.

That among such expenses are included, the purchase of food for stock, the purchase of certain kinds of manure, and the draining, chalking, and marling of the soil; the result of all which outlays is, to effect an improvement of the soil, more or less lasting, and requiring more or less time to elapse, before the increased productiveness thereby obtained reimburses the expenditure incurred.

That, except in the districts where this usage prevails, unless by express stipulation, the outgoing tenant cannot claim compensation for any of these improvements, however short may be the time between their completion and the termination of his occupancy.

That this modern usage appears to have originated in the introduction of improved forms of agreement between landlord and tenant, whereby the landlord covenanted to give such compensation; which forms have been from time to time altered, as experience suggested improvements in them, and which have gradually grown into general acceptance in certain districts, till they have ultimately become recognized as the custom of the country.

That, in practice, the compensation agreed to be paid by the landlord to the outgoing tenant is paid by the incoming one.

That its amount is found by valuers, who ascertain the cost of the several improvements, spread that cost over a certain number of years, within which each kind of improvement respectively is supposed to repay itself, and then deduct from that number the time during which the tenant has enjoyed the benefit of the improvement.

That this wider system of compensation to the outgoing tenant seems to be highly beneficial to agriculture, to the landlord, and to the farmer; to lead to a great increase in the productiveness of the soil, and to give extended employment to the rural population.

That the benefit arising from this system appears to be gradually becoming more extensively known and appreciated, and the system itself seems to be finding its way into other districts than those where it has hitherto been in force.

That the improvements above-mentioned which are very generally required throughout the country, in order to develop the full powers of the soil, are greatly promoted by this system, and therefore it is highly important that no difficulties should stand in the way of its extension by the voluntary act of landlord and tenant.

That any attempt to make its general introduction

compulsory would be met by invincible practical difficulties, and would check that growing disposition on the part of landlord and tenant to enter into mutual arrangements, on which alone your committee can rely for the general and successful adoption of the system.

That it seems very desirable to your committee that estates under settlement should be endowed with every practicable privilege for their advantage, which is attached to absolute property; and that persons having life estates, in addition to the ordinary leasing powers generally conferred on them, should be enabled to enter into stipulation of the nature of those above referred to, which, at present, it appears they cannot do.

That the power to enter into such stipulations, binding on subsequent interests, might be advantageously made a general incident to leasing powers of land in settlement, by the aid of parliament; and also be conferred on persons having certain limited interests in land.

That the law, with respect to things affixed to the freehold, is different and more beneficial as regards those annexations made for the purposes of trade than those made for the purposes of agriculture, an outgoing tenant being permitted, in many cases, to remove the former, but not the latter.

That this distinction does not appear to be supported by any sound reason, and your committee are of opinion that the tenant's privilege of removal, with respect to fixtures set up for trading purposes, should be extended to those erected for agricultural objects.

The committee divided, when Mr. Bouverie's resolutions, with some amendments, were agreed to, which form the report of the committee previously given.

The following witnesses were examined:—

J. Steward, Esq.	Mr. G. Turner
Mr. W. Hesseltine	Mr. J. Smith
Mr. T. C. Beasley	Mr. G. Harriett
Mr. C. Stokes	Mr. T. Chandler
C. Wren-Hoskyns, Esq.	Mr. H. Blandford
Mr. E. W. Wilmot	Mr. T. Swinnerton
Mr. R. B. Harvey	Mr. J. H. Waterson
Mr. J. G. Cooper	Mr. T. Carpenter
Mr. S. Jonas	Mr. H. Higgins
Mr. W. Bennett	Mr. S. Mogg
Mr. W. Hutley	Mr. F. Woodward
Mr. R. C. Chawner	Mr. H. Trethewy
Mr. H. C. Lattimore	Mr. J. Darby
Mr. E. Page	Mr. W. Barnes
Mr. J. Outhwaite	W. Pinches, Esq.
Mr. H. White	Mr. J. J. Rowley
Mr. H. Kersey	Mr. S. Gibbons
Mr. W. Shaw	Mr. T. Boniface
G. H. Ramsay, Esq.	Major F. Brown
Mr. G. Kilby	Rev. C. Nevile
Mr. B. Hatch	Mr. J. Parkinson
Mr. R. Beman	Mr. W. Smith
Mr. J. Houghton	Mr. G. Legard
Mr. T. Owen	Mr. W. Loft
Mr. E. C. Hughes	Mr. G. German
Mr. J. Crisp	Mr. R. Clutton.

EVIDENCE.

March 13th, 1848.

MEMBERS PRESENT.

Mr. E. Denison.	Mr. Miles.
Mr. Hayter.	Mr. Newdegate.
Mr. Henley.	Mr. Pusey.
Sir C. Lemon.	Sir John Trollope.

PHILIP PUSEY, ESQ., IN THE CHAIR.

The Evidence of JAMES STEWART, Esq.

CHAIRMAN.] It is well known that you are a barrister?—I am.

I believe you have paid considerable attention to the subject of the rights of incoming and outgoing tenants?—I have paid some attention to that subject.

The Committee are desirous to learn from you generally what is the present state of the law and custom of England upon that subject?—As to the subject of agricultural improvements generally I am not well informed.

The question not only refers to the subject of agricultural improvements, but to the terms on which the outgoing tenants give up land to the incoming tenants; and also to what are the tenants' rights towards the landlord, and the rights of the landlord towards them?—As to any agricultural customs affecting this question, I do not profess to have any peculiar knowledge upon that subject; but with respect to the law, I conceive the law to be this—that if the tenant in any way improves the land let to him, either by erecting fixtures, or by manuring the land, or by any other thing that goes to improve the land, either by that which is temporary in its nature, or that which is permanent, I conceive that he has no right by law, independent of custom, on going off the land demised to him, to claim anything from anybody; that he cannot claim anything either from the landlord or the incoming tenant.

With regard to fixtures, is an agricultural tenant differently circumstanced from a manufacturing tenant?—He is to some extent placed under different circumstances. I should say that generally the rule is as I have stated it; but that rule has been found to operate with so much harshness in certain particular cases, that there have been exceptions gradually introduced into the general rule; but so far as the agricultural tenant goes, I am not aware that there has been any great exception made in his favour. As far as the trading tenant goes, and as far as the urban tenants—that is, tenants who have a house in towns—are concerned, there have been very considerable exceptions made in their favour.

Will you be so good as to state those exceptions?—With respect to a trading tenant, he has been allowed to remove all those utensils and implements which he may have erected for the purpose of carrying on his trade; as, for instance, the vats of a brewer, and furnaces. In one case also (that has now by a recent decision of the House of Lords become of no very great value) a party was allowed to remove a cider-mill. According to many of the dicta of Lord Mansfield and Lord Kenyon, such a tenant would be allowed to remove buildings; but I cannot say that there has been any distinct decision to the effect that he might remove buildings; but I am inclined to think that if that should come before the courts, there would be a leaning on the part of the court in favour of a trading tenant—that is, a tenant who has land or houses demised to him for the purpose of trade. Then, with respect to the tenant of a house, he comes in under the class of ornamental fixtures. Wainscoting has been allowed to be removed, and marble chimney-pieces have been allowed to be removed; and, in short, all that was erected for ornament which could at all be displaced without injuring the landlord, the tenant, of course, being liable for any damage done by the removal. But with respect to the agricultural tenant, it has been distinctly decided by Lord Ellenborough, in the very well-known leading case of Elwes *v.* Mawe, that a tenant having found it necessary for carrying on his farm to erect a beast-house, a house for holding utensils, and various other houses of that

sort, and a wall for the purpose of enclosing the yard, it was distinctly decided that he could not remove any of them. I should say that the whole law as to fixtures is not in a satisfactory state; the very same thing has been decided differently in the two classes of tenants, the agricultural and trading tenant. A nurseryman, for instance, has been allowed to remove plants and roots, and things of that sort; and it has been distinctly decided the other way, as against the agricultural tenant, so that the agricultural tenant is in a worse position than other tenants.

You stated that the agricultural tenant would not be allowed to remove walls that are fixed in the freehold, and you think that the trading tenant would be. You are certain that the trading tenant would be allowed to remove fixtures, such as engines of any kind, for the purposes of his trade; are you of opinion that the agricultural tenant would be allowed to remove similar engines, put up for the purposes of his trade?—No, I think not. According to the law already decided in the earlier cases, that distinction does not seem to have been taken. In the earlier cases, before the time of Lord Holt, the description of tenant does not seem to have entered much into the decision either way; but in the time of Lord Holt he, perhaps first, or at any rate most distinctly, laid down the rule that the trading tenant, on grounds of public policy and expediency, ought to be favoured by the law.

Probably at the time when those decisions were come to by the courts of law there was hardly any agricultural machinery in use?—No, I should not think there was much machinery in use then; and until a late period, certainly till the reign of Henry VIII., the agricultural tenant was in a very questionable position. The old notion as to the agricultural tenant was, that he was the mere husbandman to his landlord; that he was merely there to till the ground, to render him the fruits of it; and his security for his holding was an exceedingly weak one. For instance: down to the late period of Henry VIII., and even as late as Coke upon Littleton, he lays down very strongly that long terms for years—and leases, in fact—were looked upon with very great suspicion. I can only account for that, that these long terms of years had been granted for purposes other than beneficial holding. As for leases, at any rate the law looked upon them with great suspicion, and they became gradually protected by statute, the common law being against them; and to this it is that I would attribute the rule which the law laid down with respect to agricultural tenants having no right whatever to take away anything introduced into the soil.

Then, to take an ordinary case, if an agricultural tenant puts up a plain fixture or a thrashing-machine, in your opinion, if the landlord were disposed to insist upon his extreme right, it would become the property of the landlord at the termination of the tenancy?—I have no doubt that that is the law. I may remark that I happened to see to-day, looking in a Scotch book on the Scotch law (which very much follows our law), that in the case of a thrashing-machine, the frame of the thrashing-machine the tenant was obliged to leave, but the machinery he was allowed to take away. I am not aware that that is the law in England. I should say that the previous decisions would not justify that decision here.

If a tenant were to put up a steam thrashing-machine, is it your opinion that the steam power would fall to the landlord?—I think it would be entirely in the discretion of the landlord. The courts might come to a contrary decision, which would appear to be a leaning to the tenant; but according to the existing decisions, I should have no hesitation in advising the landlord that he was entitled to this machine, always supposing it was a fixture.

What is the practice with regard to the removal by trading tenants of those fixtures; I mean, at what period are they obliged to remove them?—By a fixture I mean something that is introduced into the soil and made part of the freehold, or anything that is attached to that which is a part of the freehold.

The question put referred to the trading tenant; and what was asked was, whether the trading tenant is obliged to give any notice to his landlord; whether he must remove his fixtures before the determination of his tenancy, or whether he has any time of grace allowed him to remove those fixtures after the determination of the tenancy?—As far as the trading tenant goes, he must, I conceive, remove the fixtures during his tenancy, unless there be some stipulation to the contrary, by grace and favour, or notice to the lord, or some other way,

And so removing them, is he bound to restore the premises to his landlord in as good a condition as that in which he received them?—Certainly he must replace any damage, otherwise he would be liable to an action at law.

Are you aware of any inconvenience or litigation that has arisen from this privilege on the part of trading tenants?—No; I should say that it would be the other way with both parties. It would be no injury to the lord, and it would be of more benefit to the tenant; and in that way it would give greater satisfaction to him, and be of greater benefit to the country in furthering the purposes of trade.

Do you happen to know whether or not that power, as vested, is exercised, or whether the landlord takes this machinery at a valuation?—I am hardly competent to answer that question.

Mr. MILES.] You have stated the case of the trading and agricultural tenants, and have instanced the case of a nurseryman, who has a right to remove his plants. If the man has built a hothouse, has he a right to remove that hothouse?—According to Lord Kenyon, yes; but, in Lord Ellenborough's opinion, certainly not.

Before a trading tenant places an engine, or a matter of that description, in his tenancy, is he obliged to give notice to his landlord?—No, I conceive not.

He is able to erect anything he thinks beneficial to his own interest?—Yes.

And he has the power of removing it when he leaves his tenancy?—I consider that to be the law.

Mr. HENLEY: You have stated that the decisions of the court have established the right of a tradesman to remove what is called trade fixtures, and erections that come within that definition?—Yes.

And you have also stated that there is no decision of the courts, though there have been dicta favouring the right of a tradesman to remove buildings?—I think that is the law.

Are you aware whether the law of Scotland, to which you have alluded, recognizes that distinction between trade fixtures and other fixtures?—Yes, to the extent that I have mentioned.

You have mentioned the case of the thrashing-machine in Scotland?—Yes.

I ask you generally if you are aware whether the law of Scotland recognizes the same distinction as in England?—Yes, it does; to a certain extent it has followed our law.

Can you draw any distinction in principle between the thrashing-machine erected for the purpose of the trade of a farmer, and the fixtures erected for any other trade?—No, I cannot say that I can.

Are you aware of any decision or dicta of any court

of law in this country in which that distinction has been drawn?—No, I am not aware of any decision; the question has been frequently raised incidentally. I am not aware of any distinct decision in England as to that.

Are you aware of any dicta of any judge of any superior court in England in which that distinction is drawn? No, I am not aware of that; there may be such a thing; I am not aware of it.

You have alluded to the case of the nurseryman being allowed to remove trees from his nursery-ground, being considered part of his trade; and that the farmer is not allowed to do so. Is not that because the tree of a farmer has not been considered part of his trade; is that the principle, do you suppose?—The principle is, that in the latter case the farmer is not considered a trader at all.

And therefore not within the principle that has been applied to the nurseryman?—Yes, just so.

You have spoken of ornamental fixtures of houses; are you aware of any distinction being drawn between the agricultural tenant in particular and any other class of tenant?—I should say that if an agricultural tenant had a house, and he chose to put up an ornamental fixture in that house, I should think he would be allowed to take it away.

The same as any other person?—Yes. I do not think he would be worse off in that respect. Those cases have not usually so arisen; they have arisen in towns, and not in farms.

You have stated that an agricultural tenant would not be allowed to remove a building or a wall he had built up for his convenience?—No.

Are you aware of any decision or dicta of a judge to lead you to suppose that such a person would not be allowed to remove a building or wall?—There is an express decision to that effect by Lord Ellenborough and by others.

To what effect do they go, and what principle do they lay down?—They go generally to the principle that, if a trading tenant finds its necessary to carry on his business to erect a building, he would be allowed to take it away. That has arisen incidentally. I am not aware of any distinct decision to that effect. The case of a limekiln came before the court in a recent case. The erection of this limekiln was under discussion, and there the question went off on some other point; it was not distinctly decided.

Those dicta being so far back as the time of Lord Mansfield, you are not aware of any case that has given authority to those dicta?—No; I should say that Lord Kenyon seemed to have a very strong leaning in favour of the tenant, and so did Lord Mansfield. Lord Ellenborough's leaning was the other way.

Then Lord Kenyon and Lord Mansfield having spoken dicta that would lead you to suppose that in their opinion the buildings could be removed, in the number of years that have elapsed since that, you are not aware of any decision of any kind to give effect to those dicta?—No.

How long has Lord Kenyon been dead?—Lord Kenyon died about the beginning of the present century.

And during the whole time that has elapsed from that period, you are not aware of any decision in a court of justice that has established that principle?—No.

Mr. DENISON.] Do you consider that this comparative abeyance of the law upon these points arises from all those matters being regulated, in various parts of the country, rather by practice than by law?—I think that is the great reason; it is a case in which the maxim *modus vincit legem* applies. The common law comes in this state, and has been constantly altered, in various parts of the kingdom, by custom.

Sir JOHN TROLLOPE.] Is that custom recognized in the courts of law?—Yes.

What is the law with regard to fruit-trees and other matters planted in gardens connected with agriculture?—The custom varies in different parts of the country; there is no fixed custom as to anything; there is a distinct rule of law that would generally operate in the absence of custom; the customs vary exceedingly.

What would be the strict letter of the law?—That would depend upon the nature of the tenancy. An agricultural tenant, I conceive, would not be allowed to remove fruit-trees.

Mr. MILES.] Can you refer us to practical cases in which the dicta of Lord Mansfield, Lord Kenyon, and Lord Ellenborough are given?—I have referred to the case of Elwes *v.* Mawe, and I shall be very happy to give others that may occur to me.

Mr. HAYTER.] You have no doubt there is that distinction between trade fixtures and fixtures that are not trade fixtures?—I have no doubt of it, according to the decisions.

If you had to give advice upon that subject, and as far as you are able from your practice in the law to form a distinct judgment, have you any doubt about the distinction existing?—None at all; it is a decision fully recognized by every lawyer and by every text-book.

Do you see why the principle of law should not extend to fixtures in agriculture as well as to fixtures in trade?—The only way I can account for it is, that the tenants in towns have more power than the tenants in the country; it appears that the tenants in he country were a good deal more under the power of the landlord than the tenants in the town.

Do you see any reason why the law as you state it, if applied to fixtures in trade, should not apply to fixtures in agriculture?—No, I can see no reason. The reason for the exception to the original rule was distinctly stated by Lord Holt to be public policy and general expediency. I conceive the same general expediency and public policy would apply to the agricultural tenants, and operate to the benefit of the landlord and of the tenants too, that they should have the same power over fixtures that the trading tenants have.

Would not that very much tend to the introduction of machinery into agriculture, if it was the actual law that machinery should belong to the tenant if the tenant fixed it up?—I should certainly say so; the extent to which I would carry the law would be merely that the tenant should have the right to remove the fixture; but I should not insist upon the landlord or the in-coming tenant taking it. I would simply apply the rule that the tenant should have the right of removal.

That the fixtures should be the property of the tenant?—Yes; that the fixtures should be the property of the tenant, he being answerable to the lord for damage.

To be dealt with as a trade fixture by the tenant?—Yes, precisely.

To be his property, removed during his tenancy, and if he left it not to be removed?—Yes, just so.

Has any reason struck you at all why the same rule that applies to trade should not apply to agriculture which is carried on in the nature of a trade?—No; on the contrary, I can see no reason. The reason for the rule, as I conceive, was that the agricultural tenant had a very insecure holding indeed; that it was not then the policy of law to give him more security. I

should wish that rule were entirely changed; it would be for the general advantage of the landlord and of the tenant to give him more security.

Supposing a tenant builds a barn upon the ground, that barn is irremovable?—Yes.

If he builds it and puts it upon stones off the ground, it belongs to the tenant?—There has been a decision to that effect.

So that of course, if the wants of the tenant are unsatisfied, and his landlord, from various reasons, as from imbecility, infancy, or coverture, or otherwise, is unable or unwilling to give him the facilities for carrying on his business, the tenant is obliged to evade the law by such a process as you have mentioned?—Yes, and throughout the distinction should be taken which has been pointed at, that in many cases the landlord has no power of authorizing the tenant to do anything; and in a great many instances that is the case from our system of settlement. Therefore it would be additionally advisable to alter the law in this respect, because it would give the tenant a distinct rule by which he could guide himself.

You are understood to say that there are many landlords so situated with respect to property as to be unable to give those facilities, however willing they may be?—I should think two-thirds of the lands of England are settled in that way.

Do you see any difficulty in altering the law to meet that exigency?—None at all. I think it is a simple and safe alteration.

The Committee are to understand that you would advise a uniformity with regard to the law in reference to fixtures, as applicable to tenants in trade as well as tenants in agriculture?—Yes.

You see no reason why the law that applies to one should not apply to the other?—I see no reason for any difference.

Mr. NEWDEGATE.] Would not it be necessary, in case of the application of steam-engines to thrashing and other purposes, to make some special provisions to guard against any danger from fire?—I should think that it might be safely left to the parties themselves, if it was thought to be of importance.

Mr. HAYTER.] Do the insurance offices charge a much larger per-centage in consequence of steam-engines than they do if there are no steam-engines?—Yes, in some cases.

Mr. MILES.] Would you or not make it obligatory, in case of a steam-engine being put up, that the tenant should insure against fire, the insurance office charging a larger per-centage for that?—I should not be inclined to make it obligatory; it might be left open to the parties; I do not think any immediate harm would arise.

Mr. HAYTER.] Has not the landlord the immediate power to give notice to the tenant to quit. You are speaking of that which is now independent of contract?—Independent of contract.

Are you speaking of tenancy from year to year?—I am speaking of tenancy from year to year, and also of a lease which has no provision in it upon the subject.

Why should a clause which does not apply to existing leases apply to any leases not existing?—I should say that it was a thing that might be left to the parties.

You were understood to say that a tenant is now allowed to remove a building erected upon stones, and is not allowed to remove buildings placed upon the ground; a barn, for instance; but, according to your opinion, he ought to be allowed to remove it in either case?—Yes.

You were also understood to say that there had been no decision authorizing a tradesman to remove a building?—No.

What do you propose to do in the case of an agricultural tenant who is placed in a different position by law from what the tradesman is now placed in?—I would place all tenants in the same position.

Then it must be a general law?—Yes, it must be a general law.

As it appears now, a tradesman has not, by decision of law, a right to remove a building?—It has not gone to the extent of a decision.

Is it your opinion that the alterations of the law should be made generally applicable to all tenants throughout the kingdom, and not be restricted to agricultural tenants alone?—The law stands in this way: so far as the agricultural tenant is concerned, there has been a decision directly against his removing buildings; as far as the trading tenant is concerned, there has been no decision in his favour; but the decisions have very nearly gone to that length, and there have been dicta in his favour. I should be glad, as far as my opinion is concerned, to see an alteration in the law, which would place both agricultural and trading tenants on the same footing, and allow both to remove buildings.

Are you aware, from your practical knowledge, that it is the custom or usage of tradesmen to remove buildings?—I should say to this extent: I can speak from personal knowledge to the extent of trading tenants having the power of removing fixtures.

Buildings?—No, certainly not; I can produce no decision.

In spite of the dicta, are you aware yourself of any matter that had come before you, that trading tenants have removed buildings?—No; I am not aware of any.

So that, in point of fact, as far as you know, they both now stand upon the same footing, with the exception of the dicta?—Not quite to the same extent; because, if I were to be required to advise as to the prudence or advisability of removing buildings, I should give very different advice as respects the trading and the agricultural tenant. I should tell the agricultural tenant certainly he could not do it at all. I should state the opinion I have stated here, that it might be very reasonable to suppose the trading tenant would have a decision in his favour.

And he would have a better chance in going to law than an agricultural tenant?—Yes.

CHAIRMAN.] Your answer applies to buildings, not to fixtures?—Yes.

With regard to fixtures, you have no doubt that the trading tenant has the power to remove trading fixtures, and the agricultural tenant has not the power to remove agricultural fixtures?—Yes; and I can state a case rather in favour of the trading tenant having power to remove buildings. In one case, a man who was a soap boiler was allowed to take up and remove the pavement of the yard, constructed for that purpose. It was not, certainly, a building; but it was attached to the freehold.

Mr. HAYTER.] Can you see any injury to arise to the landlord, if he has his property restored to him precisely in the same condition in which he let it to his tenant?—Clearly, as you state it, no injury could arise; but so far as I understand the general nature of the agricultural tenancy, the tenant, by the mere course of fair agricultural employment of the land, would improve it; and at the expiration of any lease, for any given number of years, the land would be returned to the landlord in an improved state. To that extent, I think, the tenant would keep the land by good care and industry in a proper improved state of cultivation.

Does not it stand to common reason that it would

be a very strong inducement to a tenant to erect an expensive permanent fixture upon the soil, if he had the means of carrying on his business more satisfactorily by means of that machine?—I should say so.

It would be a strong inducement to the tenant to erect such machinery?—Yes.

And if the landlord, at the end of the period, receives the property which he has leased in as good a position as he let it, is any injury done to him?—So far from there being any injury, I think benefit would accrue to him in this way. Encouragement being given to the landowner, the in-coming tenant might possibly be better disposed to take the farm, or whatever it was, in its improved state. It appears to me to be to the benefit of the landlord to encourage those erections.

Would not it be unfair that the landlord should get any rent that might accrue from the benefit of an improvement for which he never paid?—Yes, I think; undoubtedly, it would be unfair. I think the present state of the law favours the bad landlord and the bad tenant, and it injures, you may say, the good tenant.

And because it would be unfair would be a reason why a law should be passed to meet the cases of those who are unable by reason of lunacy, infancy, or coverture, or other disabilities, to authorize a tenant so to improve the land in his own possession?—That is a great reason for the alteration of the law, when you consider how much land is held by tenancy for life by persons who have no power of that sort under a settlement.

Mr. HENLEY.] You have stated, in answer to a question put to you, that in your opinion, as a general proposition, the landlord is not injured if he gets back his estate in the same condition in which he leased it?—Yes, I said so.

That must be, of course, with reference to the rent paid by the tenant?—Yes.

Because, if the landlord has let to the tenant at a low rent, expecting and calculating that the tenant is to make improvements, then your general proposition would not hold in that case?—I go to this extent against the tenant; I think the agricultural tenant is bound to do something more than restore the land.

The question put was this: If a landlord rents a farm to his tenant, with a low rent, with the expectation that it is to be improved, is he, or not, injured if the farm is given back in the same condition as it was let to him?—I was going to say, that if there was a distinct understanding given in writing, or even verbally: I do not know what the case is exactly which the question contemplates; but if there be a distinct understanding that the tenant is to get the land at a lower rent, on the condition that he would improve it in a special way, it would be unjust to restore it simply in the same condition as he received it. I have in my view the whole class of tenants. The agricultural tenant appears to me to stand in every way on different grounds from the trading tenant. I do believe that the agricultural tenant is bound to restore the land, after a term, in a better condition than he found it, upon the ordinary rules, without any claim upon the landlord at all; but where the tenant lays out his capital in erections, by way of fixtures, or in any other special way upon the land, I think he has a definite claim upon the landlord.

Can you draw any distinctions between the public policy of a law which favours the tradesman in carrying on his trade, and a law that would induce an agricultural tenant to cultivate his land well, and use the proper instruments for the proper cultivation?—No; I think they should be placed upon the same footing; but I would make this distinction, that the tradesman need not erect those buildings. But then the question comes to this, that whatever he raises for the purpose of carrying on his business, he does erect, if he pleases to erect it, upon the certainty of being remunerated, or having the power of removal. The injustice appears to me to be done to the agricultural tenant, and that he is placed on a different footing; and if he uses extraordinary exertions, and erects buildings, it is to be presumed that he would not erect them unless they were absolutely necessary to carry on his trade as a farmer. It is unjust to place him on a different footing to other tenants, and say, "You shall not have the power of removing those fixtures."

CHAIRMAN.] Are the Committee to understand that your answers, which have lately been given, referred to whether the landlord did, or did not, receive back his buildings in the same condition as he let them, and not to the general condition of the property?—To the best of my recollection they were not entirely intended to apply to fixtures.

Mr. HAYTER.] In the question that was put to you with reference to returning property back to the landlord in the same condition as it was received by the tenant, the question was intended to apply simply to fixtures, and to that species of machinery which is attached to the soil, and not to the general improvement of the land itself; do your answers that you have given apply to that class of question?—They would certainly apply to fixtures; but I am afraid that, in my answers, I branched a little wider.

Mr. NEWDEGATE.] It has been suggested to you that some difficulties have arisen, perhaps not unfrequently, with reference to the nature of fixtures. Will you inform the Committee whether it would be necessary in some way to define what those fixtures are, for the purpose of agriculture as a trade, not for the occupation of a house as a residence, or for purposes of sporting, or any other purposes than those of agriculture as a trade?—There are, no doubt, questions which have arisen very frequently as to what are trading fixtures; there have been a great many cases on that point. My answer, in fact, was independent of the particular question before the Committee; it was in relation to a general wish to simplify the law, and that one uniform law should be applied.

Then the power you would give to tenants, of removal, would only apply to fixtures that were strictly applicable to agriculture as a trade?—I should be disposed to go a little further; I should be disposed to define what fixtures are; which I conceive to be whatever are attached to the freehold, and may be removed. I should be inclined to go the whole length of saying that the tenant should remove everything coming within that description.

And that he should have the power of erecting?—Yes, of erecting and removing.

Take the case of a tenant who is fond of coursing, and who builds a kennel upon his grounds; would you give him the power of erecting that upon any part of his occupation that might suit his convenience, and of removing it before the end of his term?—I should be so disposed; I should say, if he removes it and restores the land back to the landlord, without any injury to the land, I should be disposed to let him.

Supposing this building was so situated as to become a residential injury to the landlord himself, and that it were placed somewhere in a conspicuous part of the farm, immediately within view of the landlord's house?—Then it would open another question. Of course, if he used this power to the annoyance of the landlord, there would be an indictment, or action for nuisance; he would be subject to the provisions of the law.

Do you think the law gives sufficient means to guard

against residential injury?—I can hardly understand the exact amount of injury. If there was an injury to the convenience and pleasure, or fair enjoyment of the land by the landlord, I think the law would protect that.

Supposing a case, where there might be a disagreement between the landlord and tenant upon a lease, and the landlord's house looked upon a field which was under this lease, and the tenant built a wooden barn, and painted it bright scarlet?—It would be exceedingly difficult to make exceptions to the law; but I should be disposed to lay down a general rule. As I have already mentioned, occasional cases of hardship might arise; but if these are any serious annoyances to the landlord, I think he would have his remedy.

Would not what you propose invalidate the remedy of the landlord as against such annoyances as I have described?—I conceive not.

Mr. HAYTER.] In such a case would not the landlord, if there was no contract, give a notice to quit?—I conceive so.

If there was a contract, under that contract he could not erect such a building?—Exactly so; and it is to be remembered that if the tenant raised such an obstruction he would be obliged to remove it.

Mr. NEWDEGATE.] Would that be the case with a tenant under an existing lease?—It would depend upon the terms of the existing lease. I think the alteration I have suggested would be valid in the absence of any express contract in the lease, or where there was no contract at all.

Then it would be applicable to the case of land under lease?—Yes; I conceive so.

And you do not think it would be necessary to guard against the possibility of such an annoyance?—I think it might be a case for special legislation.

Mr. HAYTER.] Do you see any reason why that particular species of inconvenience should be guarded against by enactment rather than any other inconvenience that may be the subject of contract?—No; it does not appear to me to be likely to operate to such an extent as to be necessary to be provided for; it might be necessary for the legislature to consider that.

Mr. HENLEY.] You have stated what your view would be as to the propriety of an alteration of the law generally. You may be aware probably that the practice is very common in many parts of England for the landlord to find timber and other materials for the use of the tenant, without any specified direction as to where those materials are to be applied. As to buildings erected by the tenant, of which the timber was furnished to him for the purpose from the estate, what would your proposal be as to his taking that building away? Have you considered that case? and if you have considered it, what would be your view of the proper course to be taken in regard to such a case?—I have not had an opportunity of considering that case.

Are you aware that that practice exists to a very considerable extent?—Yes, I am aware of the custom.

Can you state your opinion to the committee, or cite any cases as to what would be the proper mode of dealing with such cases?—I conceive that question to point to this; as to whether the erection of buildings from this source should make any difference in the general rule.

The raw material having been entirely furnished by the landlord, in your opinion can the tenant be allowed to remove that building?—No; I should say that that building, being erected under particular circumstances, he should not be allowed to remove it; that would be a fair subject for special legislation.

Then the next point is, what proportion of the materials so found by the landlord would, in your opinion, be proper to make the subject of special legislation?—I do not know how far the custom of the country might at all regulate that.

You having suggested a general alteration of the law, this being a proper subject to arise, you are requested to state whether you entertain any opinion upon that subject?—That is a case that has not occurred to me. My impression would be, upon that subject, that the tenant should not be allowed to remove the building.

Your proposal would be, generally to make a law to affect all existing contracts as well as future ones?—Yes.

In that part of England where the practice has been nearly universal, in which more or less the raw materials are found by the landlord for those purposes from the estate, do you think that, if the materials were all found, the tenant ought not to be allowed to remove the buildings?—In that case he ought not to be allowed to remove those materials. I should say that, in that case, it would be a matter of special legislation in favour of the landlord.

Taking the case of a wall of stone, the raw material being dug upon the estate without any payment from the tenant to the landlord, and timber being cut off the estate without any payment being made to the landlord, in such a case as that should the tenant be allowed to remove the building?—I should think that the case of the barn is stronger than the case of the stone wall, because those materials I presume to be of some value.

As there are practical difficulties in dealing with the case, and it being desirable to obtain the opinion of so experienced a gentleman as yourself upon the matter, you are requested to state what would be your opinion in the case of the stone being dug upon the estate, and the stone that makes the lime being dug upon the estate, and the timber used being cut upon the estate to form the building so erected?—I have never considered that question, as I have already stated; but my impression would be, if the materials were in fact found by the landlord, or obtained from the soil of the landlord, the tenant being only entitled to the surface of the soil for his agricultural purposes, that that would be a case where the tenant should not have the power of removing the building, and in which the erection should be left for the benefit of the in-coming tenant and of the landlord.

Are you prepared to state what, in your opinion, the just proportion would be that the tenant should or should not have the right of removing; that is, what proportion of the materials of the building, having been found by the landlord, should or should not give the tenant the right of removal?—It comes to me as quite a new question, as a new view of the matter; I can only state my present impression would be in favour of the erection remaining on the land for the benefit of the landlord, and of the in-coming tenant; certainly that would be so where the whole of the materials were so furnished. Then, as to the proportion, it appears to me there would be extreme difficulty in legislating as to the proportion or the exact extent of the proportions of the erection, whether wall or barn; it would be difficult to legislate upon.

The general proportions in those cases are simple enough; it is those mixed cases which, in nine instances out of ten, are the real cases where the difficulty is found?—Yes.

Mr. NEWDEGATE.] Is not it possible, with the distinction which you think exists between the case of a trading tenant and of an agricultural tenant, with reference to his right in respect of fixtures, that the difficulty may have arisen from the fact of the landlord's capital being, in most cases, joined with the tenant's capital, on making those permanent improvements?—I think that that, to some extent, may have had effect.

And that in fact they stand not only in the relation of

tenant and landlord, but very often in the relation of co-partners in the capital employed?—Yes.

Mr. HAYTER.] At present the law is, that such fixtures should belong to the landlord?—I conceive so.

Those improvements were effected partly by the landlord's materials and partly by the tenant's labour, and *à fortiori* they all belong to the landlord?—Yes.

In the alteration just suggested, would your answer apply to present contracts, not future contracts?—Yes.

Future contracts may be at the option of the parties, except so far as relates to persons under disabilities?—Yes.

A question would arise in cases where leases are held under parties affected by disabilities?—The fault of the present law is that the general rule is wrong; there must be exceptions arising from particular decisions or particular contracts; but I think that the general rule of saying that the tenant shall not have the power of removing the fixtures erected which are his own property, is wrong. I should like to see the general rule altered, and then, of course, fresh contracts might be entered upon, having regard to the new rule.

Mr. HENLEY.] Upon the new general rule which you would bring to bear in the case of existing as well as of future contracts, would you intend, if it was necessary, in your opinion, to make special provision for such cases as I have named?—I should say that would be a point to be provided for by special legislation.

Mr. HAYTER.] Supposing there were any difficulty about meeting that particular case alluded to, it would not affect the other general rule of allowing all fixtures that are put up solely at the expense of the tenant to belong to the tenant?—No; if the Act were so drawn as I should suppose it would be easy and proper to draw it, I am not sure that the question now put would be affected by the Act at all; therefore, the better way to provide for the difficulty would be simply to say (and that is the only just point to go to), that if the tenant at his own expense erects a fixture, that he shall have the power of removing it; that is the only extent to which I wish to see the law altered. If the tenant got his materials in the way suggested, he would not be benefited by the rule.

That is the qualification of the general proposition?—Yes.

Your view is this, that if the whole building or fixture be erected by the tenant, and at his own expense, it is advisable that there should be an alteration of the law, declaring fixtures or buildings so erected to belong to the tenant?—That, it appears to me, should be the law.

Sir J. TROLLOPE.] You have stated with regard to machinery erected for agricultural purposes, we will take the thrashing machine; that would not be removable by the tenant?—I think not.

A thrashing machine, under those circumstances, you consider to be a fixture?—Yes.

What makes it a fixture?—Its being annexed to the soil, or to something which is annexed to the soil.

Would that make it, in the eye of the law, a fixture?—Yes.

A thrashing machine is a moveable machine, and not placed in the ground?—Then I speak in ignorance; I conceived that those thrashing machines were fixed in the land.

The building being in the land, and the machinery being moveable?—That is sufficient, according to our law; if anything is affixed to the soil, and to the freehold, or affixed to that which is affixed to the freehold, it is a fixture; but as to the point of the thrashing machine, that has certainly been considered a matter of doubt. I am not aware of any cases being decided as to thrashing machines, but I conceive it would be to the landlord, if the machinery was fixed in the soil; if that is the nature of the machine, if it is merely placed upon the land, then it would not be different; each case must depend upon the particular circumstances.

There is no decision in the law with regard to that machine?—No.

Sir C. LEMAN.] Are you aware of any instance in which the landlord has insisted upon his strict right of taking a steam-engine?—I am not aware of any such case.

Mr. HAYTER.] Are you aware of any case where the question has arisen between heirs and executors?—Only from the books; there is a case between the heirs and executors, a recent case that came from Scotland; a case reported in Clark and Finnelly. The committee may be aware that there is a case of a cider mill: but I do not mention that particularly, because some doubt was thrown upon it in that case. But C. B. Comyn decided in a case, that a cider mill that was affixed to the soil might be removed by the executors, that being a trade fixture. That is one of the strongest cases in favour of the trading tenant; I do not place much reliance upon that case, because it is very imperfectly reported, and was questioned in the recent case from Scotland.

Mr. HENLEY.] Have you ever known any case where a tenant leaving a farm has had the thrashing machine kept by the landlord?—I am not aware of any such case.

Have you ever heard of such a case?—I have heard the question raised, whether it could take place.

Have you heard it otherwise than as conversation, as a curious matter; has it occurred to you as a matter for legal advice?—I have heard it mentioned at a society I have the honour to belong to, and there it was considered a doubtful case.

CHAIRMAN.] Will you state to the committee what are the foundations of law or custom on which the surrender of a farm by an agricultural tenant rests, as regards an in-coming tenant, and as regards the landlord. As to the remuneration for acts of husbandry where he has not received the benefit of manure, and where he has not received the benefit of the improvements generally?—I conceive that the law is this with respect to all unexhausted improvements by manure, or by husbandry, or by any other way, that the tenant is entitled to no remuneration whatever, either by the landlord or by the in-coming tenant, except, as I say, by the custom of the country.

Is not it the case, that in different districts of the country various customs prevail as to the remuneration which the out-going tenant is entitled to claim for the acts of husbandry that he may have performed?—So I have understood from witnesses; I understood so from a competent person only a day or two ago; in Devonshire no such custom exists at all; in other counties, as in Kent and Sussex, I have understood very large sums are always paid by in-coming tenants.

Is not it the case that in some parts of England the out-going tenant is by custom entitled to remuneration for certain acts of improvement done in the ordinary course of husbandry?—So I have understood; but with respect to that I merely speak not from my own information, but from general information.

Can you state to the committee how far those customs, as customs, are binding in law or not?—I conceive they are certainly binding in law; that evidence of those customs may be given and will be received by a court of justice, and that they distinctly and expressly bind dealings in land of that description, but that they are exceedingly conflicting; and it is also difficult when it comes to the point to ascertain exactly what the custom is.

Can you state to the committee whether a contract for remuneration for improvements entered into by a person having a limited estate in the land, contemplating therefore the payment to be made by his successor, would be

binding upon that successor if this special covenant were not supported by the custom of the country in which the farm is situated?—I conceive that any agreement by a person having a limited estate would have no effect whatever if such agreement were not supported by a corresponding custom; it would be rendered valid by that custom. I conceive a tenant for life, or a person having such limited interest, except to the extent of his estate, can enter into no contract whatever with any tenant independent of settlement.

To put a special case: supposing in one of the eastern counties it were the custom of the country to consider the period of remuneration for draining to extend to ten years, there can be no doubt that the contract between the landlord and the tenant to that effect would be binding upon the successor and the landlord; but supposing a landlord in one of the western counties to enter into such a contract, not being supported by the custom of the country, are the committee to understand from you that that contract would not be binding upon his successor, and that so far as it was binding against himself it would fall upon the personal property he left behind him?—It would be so. It would not be at all binding upon the successor; and so far as he pledged himself and his representatives, they would be bound, and not the estate.

Mr. HAYTER.]—In fact no man can bind his estate beyond his interest in it?—No.

And if he attempts to bind it beyond his interest in it, that contract fails, and custom takes the character of the law?—Yes.

Mr. HENLEY.] You have stated that, in your opinion, by the law of England no tenant is entitled to remuneration for acts done on the land, if he quits it?—Yes.

What is the law of England as to the right of tenants to deal with the land as to taking the crop after the determination of the tenancy?—I believe that in most parts of the country an out-going tenant has advantages of that sort; he can come in and crop the land. I only speak of this from general statements.

Can you say whether that is so general as to amount to being irreversible; that is, that a Lady-day tenant quitting land on which he has sown a wheat crop without special contract, would, by the general law of England, be enabled to reap that crop?—I should say there was a general custom to that effect.

Can you state how far that general custom goes in other particulars?—No; I am not in a condition to state that.

Have you turned your attention to this point; whether or not that general rule of emblements have been varied by special custom, giving a more extensive right to out-going tenants in some counties?—I believe that has been varied. The doctrine of emblements only applies to certain cases of yearly tenants.

But that which comes under the general term of emblements has generally, probably, been the foundation of that custom?—Yes, I conceive so.

You cannot undertake to give the committee any information as to the general law about emblements?—Not other than as I have stated; that the general custom is to that effect, and that it is so stated in the books; and, moreover, I have heard that it is supported by the general practice in agriculture.

Have you then taken, in regard to out-going tenants, what would be the right of the in-coming tenant; would he have any right; and if any, what, to come into the land?—I have heard also, that in some counties the in-coming tenant has the right.

What is your opinion as to any general right?—I should say there is not a general right as to that; I have heard that in some cases the in-coming tenant has a certain power.

You do not speak of that as amounting to a general power?—No, I have not found that stated in any law book, that I am aware of.

Mr. NEWDEGATE.] Are there any landowners, or persons standing in the relation of landowners, who are by law incapacitated from binding themselves and successors to remunerate their tenants at the termination of the tenancy for temporary, durable, or permanent improvements?—I should say a large class indeed.

Should permanent or durable improvements be permitted without a certificate of its expediency being first obtained by competent persons, after a view of the estate?—That question appears to me to branch into the general question of legislation on what is called agricultural improvements. I conceive that there are such difficulties attending general legislation, except as to draining, perhaps, that I cannot advise the committee to attempt any general legislation upon the general subject.

Supposing any landlord, or any other person to stand in the relation of landlord, having only a temporary interest in such land; for instance, a mortgagee in possession, whom it would be desirable to compel to remunerate his tenants at the termination of their tenancy, for improvements made by the purchase of artificial manures, or food for cattle or sheep; do you think it would be desirable to compel any such remuneration?—I see such great difficulties in the way of legislation on the subject of improvements, that the only extent to which I can go is, that I think the rule should be, that the right of the tenants to improvements should be admitted, but I feel very great difficulty in knowing how that right is to be enforced.

Can you tell the Committee whether if a landlord, who is in every way competent, of his own free will gives a tenant security for his improvements, in the event of the estate being sold, the tenant can recover from the vendor; or in the event of the landlord becoming insolvent, how can the tenant recover, especially in the case of entailed estates; is there any power of recovery?—That question suggests one of the many difficulties as to legislation; I will answer that question on that head if it be desired. I have stated generally that I do not see how the difficulties are to be overcome; we have a great want of information; we have, too, the conflicting custom of the country. I do not think we can have any beneficial legislation upon the subject; the question assumes that the person is entitled to the fee-simple.

Yes; supposing he sells the estate, can the tenant recover?—I do not think he could. The question is this, supposing a person enters into a contract, as being seised in fee-simple, with a tenant, that he would be responsible for the improvements, and then he sells the estate, how far would that obligation affect the fee-simple that he sells. I conceive that it would not affect it, unless there was some agreement, or some understanding; if the tenant had this agreement endorsed on the title-deeds, or in such way that notice could be given of it, there might be some question raised then.

Mr. HAYTER.] Is there any difference in that and in any other security that the landlord might give for anything else?—No.

CHAIRMAN.] If a landlord, in a county where a custom prevails of allowing a certain number of years' compensation for marling the land, were by special contract, in letting his land, to define that amount of compensation to run for so many years within the custom, and were subsequently to sell the estate, against whom would the tenant's remedy fall; you have informed the Committee that a tenant for life, entering into a contract to give compensation for improvements, in accordance with the custom of the country in which the farm is situated, would be able to bind his successor?—Not by his contract, but the custom operates.

Still, is not the custom, to a certain degree, varying in itself? and supposing the custom to vary between four and eight years, for a certain specific kind of improvement, would not it be competent to the landlord to define that custom by saying that the compensation in this particular letting should be for six years?—It would be so far evidence as to his opinion of the custom; but besides this it is a general rule that a purchaser takes subject to existing leases, and is bound by their covenants.

Supposing a landlord to sell a farm, and he was under covenant to give this compensation, upon whom would the tenant, after the sale, come for the compensation?—If this were according to the custom of the country, and he could prove that, he would be able to establish the benefit that was agreed to be given to him.

Against whom?—Against the landlord for the time being.

In point of fact, you are well aware that those payments are always made by the in-coming tenant, and that the landlord knows very little about them?—He often knows very little about them.

Mr. Hayter.] He buys the land subject to the interest of the tenant on it?—Yes.

Chairman.] In order to clear up the point as to the legal effect of this custom, suppose that an extreme case be put; that the landlord is not able to let the farm, and does not occupy it himself, then what remedy would the out-going tenant have?—So far as the advantage he would have in the case that has now been put it, would be this, that he has two securities; one the custom of the country, and, according to that custom of the country, the in-coming tenant would pay those sums; the second would be on the particular contract with the landlord who had entered into that contract with him; and to the extent of his estate he would be bound by it. I think that the successor would not be bound to indemnify these out-going tenants. I conceive there is no custom of that kind, therefore all that the tenant can do is to claim from the in-coming tenant the sums that arise in this particular case.

To simplify the question, supposing no sale of the property to have taken place, and no contract to have been entered into between the landlord and the tenant, but that the same landlord remains at the cessation of the tenancy, and the farm has been held, as often happens, without any agreement, but merely according to the custom of the country, then in that case, if the landlord were unable to let the farm, and did not occupy it himself, against whom would the tenant have the remedy for the improvements he had made?—By the existing law he would have no remedy at all.

Mr. Newdegate.] In the case of a landlord selling an estate, having entered into an agreement with the tenant for improvements, and the landlord becoming insolvent, would the tenant have any power of recovery against the estate of the landlord?—The case I understand to be this: a person being seised in fee-simple enters into a contract with the tenant for the restitution of improvements, and he subsequently sells the estate, and becomes insolvent; there is no notice to the purchaser, of this contract at all; of course the purchaser takes the estate free from the obligation, and the tenant has no remedy except so far as the assets of the vendor are concerned.

Mr. Hayter.] In that case it is a personal contract between the landlord and the tenant?—Yes.

And becomes a personal contract?—Yes; it is not a contract that runs with the land.

There might be a contract to this effect, that the landlord might say, your rent shall be abated till it is paid?—Yes.

And in that case the purchaser would buy the property subject to that liability?—Yes.

Mr. Newdegate.] In the case of an agricultural tenant agreeing to repair, would he be liable at the expiration of his tenancy to leave his buildings, gates, drains, and so on, in the same state as he found them at the commencement of his occupation?—I think so.

Mr. Hayter.] Reasonable wear and tear excepted?—Reasonable wear and tear excepted.

Mr. Newdegate.] In the event of a tenant leaving his land foul with weeds, or lowering its standard of productiveness by excessive cropping, understocking, or neglecting to purchase manure, what remedy has the landlord?—Whatever breach of contract was committed by the tenant, the landlord would have his action on the covenant, if the covenant were broken.

I put the case in the absence of a special contract?—It would depend entirely upon how far the state in which the farm was left was contrary to the custom of good husbandry; but then it would be a very difficult thing to prove that point. A tenant may go a long way in injuring the farm with comparative impunity.

In that event, the landlord has no distinct remedy?—No, he has no distinct remedy.

Mr. Hayter.] Has he no remedy by action for cultivating contrary to the custom of the country and good husbandry?—Yes; but you must make out a very strong case against the tenant.

There may be a difficulty perhaps, but still the remedy is by action?—Yes; as I stated before, the question is, whether the tenant has cultivated according to good husbandry, or whether, in fact, the neglect he has shown comes up to the mark; that is a question of evidence.

The right undoubtedly exists?—Yes.

Though there may be a difficulty in establishing it?—Yes.

Sir C. Lemon.] The remedy would be the same as with respect to the title itself?—Yes, undoubtedly, and in the case of a lease there is an existing covenant to repair, and so on. In the case of a new lease there might be a covenant that a certain degree of good husdandry would be observed by the tenant.

Mr. Newdegate.] At the same time the remedy is not very distinct?—I conceive, as I have said, that the tenant may go a long way.

Without the landlord being able to recover?—I conceive so.

Mr. Hayter.] That arises from the difficulty of ascertaining what is good and what is bad husbandry?—Exactly so.

Mr. Newdegate.] In the event of a tenant overholding, breaking up old turf, or doing other injury, should not the landlord have some summary means to eject or restrain, particularly in the event of injury to the property, where the injury to the property has occurred while the process of action was going on, being great?—He has now in some cases a summary remedy by injunction. I certainly think, however, if legislation was to be attempted on the subject of permanent improvements, it should be accompanied by remedies in favour of the landlord as well as in favour of the tenant. I entertain no doubt that those cases should be provided for in favour of the landlord, in the same way as the improvements in favour of the tenant. At the same time, as far as I see, I should not be disposed to legislate on that subject without further information.

Supposing that injury has been done by the tenant as described in the last question, and he becomes insolvent, has the landlord any remedy?—No, I conceive not.

To direct your mind to a special case: suppose notice be given to a tenant to quit, he not being under lease; of course, he being an annual tenant, there will then be six months to run; and supposing that he sows

the greater part of his farm with charlock, which is a very noxious weed, has the landlord, in that event, any power of recovering damages?—I think that rather a question for an agricultural jury.

You cannot specify any remedy?—It would depend upon special circumstances; I cannot say how far it would be considered against the course of good husbandry.

Do you think there would be a remedy against a tenant for such an injury as that?—I do not consider myself competent to advise on this point.

CHAIRMAN.] You state that the customs of compensation for general acts of improvement are binding in those districts where they prevail; are you aware what has been the duration of these customs, and how far they have obtained, or can you inform the committee what time is necessary to give them legal validity?—I cannot speak with any degree of certainty as to that. In one of the law books (Woodfall on Landlord and Tenant), I think there is a collection of those customs, or of what are considered to be the customs; and according to my recollection they vary very much as to their nature. Upon that point of evidence as to custom, it is one in which you must trace the custom back beyond legal memory. No custom can have any validity, except it be a custom of that nature. That is very much varied by circumstances; I once attended the Welsh circuit, and I used there to hear evidence of customs of this nature.

You state that in strict law the custom must be traced back beyond legal memory; what is that period?—I should say that it would be sufficient if it were proved to have been the custom 20 years. Those legal memories have been very much reduced; I should say that if a custom has existed 20 years, that would be a custom to go to a jury upon.

You consider, practically, a period of 20 years is sufficient to establish the validity of a custom?—Yes; I think if a competent person proved that he had known such a custom existing for 20 years, that would be sufficient to go to a jury upon. It is a question for a jury; the evidence is very conflicting very frequently; there is no certainty as to it. It appears to me to leave the law in a very unsatisfactory state as to the rights upon such points, depending, as it does, only upon this conflicting evidence as to custom; which custom certainly does not exist at all in some parts of the country.

You consider the law, as to the custom, in a very unsatisfactory state?—The law is in a very unsatisfactory state as to that. I can easily understand that in different parts of the country the nature of the land requires different customs to exist.

Mr. HENLEY.] With your full knowledge of the inconvenient state of the law, you are not prepared to recommend legislation upon it at present?—No, not until we have further evidence; except that, as I say, I am in favour of what I call the right of the tenant to unexhausted improvements.

CHAIRMAN.] You have stated that your professional pursuits have not led you to any minute investigation of these varying customs?—No; it has only come before me incidentally, but I have no actual experience upon the subject.

And you have not, therefore, sufficient acquaintance with those customs to recommend any particular line of legislation, without further information?—No, I am not competent to enter into that.

Sir C. LEMON.] You have mentioned that you could not advise the committee to adopt any legislation with respect to the points your mind has just been directed to?—That is so.

Is there any improvement that you could advise in relation to any alteration of the law, excepting as to the power of removing buildings whereby the agriculturist should be put upon the same footing as the trader?—I feel less difficulty as to draining, which is a thing that I think might be ascertained; but I feel less difficulty as to draining than any other matter.

Upon that subject, I think you said it was inexpedient to adopt any alteration of the law?—I should say so, without further evidence. If there were a body of evidence collected upon the subject, then it is possible that legislation might be advised upon it. At present I do not think there is sufficient evidence upon the subject.

It is your opinion that if an alteration of the law be expedient on any point, it is with regard to drainage?—Yes.

That would be more manageable?—Yes.

But even on that subject you do not recommend any legislation?—No.

March 16th, 1848.

MEMBERS PRESENT.

Earl of Arundel and Surrey	Sir C Lemon
Mr. Bouverie	Mr. Moody
Mr. Burroughes	Mr. Newdegate
Mr. Hayter	Mr. Philip Pusey
Mr. Henley	Sir J. Trollope.

PHILIP PUSEY, ESQ., IN THE CHAIR.

The evidence of Mr. WILLIAM HESSELTINE.

CHAIRMAN.] You are a farmer in North Lincolnshire?—Yes.

In the village of Worlaby?—Yes, in the village of Worlaby.

About what number of acres do you occupy?—1,557.

Is it chiefly arable?—A little more arable than grass; about 1000 acres arable; the remainder is grass.

The land you occupy is on the chalk hills?—Yes; the high land and the other is low land upon clay.

What is the nature and character of your arable land?—It is a light loamy soil, sand mixed with it; a seam of sand above the chalk.

When was it your family began to occupy this farm?—In 1812.

What was the state of the land when your father took it?—It was in a very bad state of cultivation; only just broken up from heath; they had not got it into any sort of state for growing corn.

What should you say was the produce of the wheat?

It was in such a state that it would scarcely grow wheat; not more than two quarters an acre.

What sort of wheat did it grow?—It was of a very indifferent quality; it used to be mildewed.

How did your father set about improving this farm?—He first began with liming and using bones.

And did he continue the liming?—He did not continue the liming long; some land had been chalked in the adjoining village that appeared to answer very well; then he began to chalk in 1815 or 1816.

Will you describe the process of chalking to the committee?—All the fields contain chalk within some 16 or 18 inches of the surface, and pits are made; and it is carted and spread upon the land.

What quantity do you put upon the land?—About 90 cubic yards to the acre.

What do you consider the expense per acre?—From 55s. per acre to £3.

Has that produced a very beneficial effect upon the farm?—Yes, a very beneficial effect.

Has it altered materially the quality of the land as a wheat bearing soil?—Yes, more particularly for turnips in the first instance.

Previous to the chalking, were the turnips an uncertain crop?—Very uncertain; it would not grow any turnips before it was chalked; they would grow very well until they got singled, and then they would be affected with the grub, and go away.

Do you now get good crops of turnips?—Yes, very good indeed now.

How many sheep can you winter to an acre of turnips?—About 10 sheep to an acre.

How many acres of turnips do you generally have?—I generally have about 250 acres; it is managed on the four-course shift.

So that you winter about 2,500 sheep?—Yes, generally.

Can you state how many sheep could have been wintered before your father's occupation of the land upon the same farm?—One-fourth probably would be as much as it would keep.

Has this operation of chalking not only been beneficial to your farm, but beneficial to any large tract of country in your neighbourhood?—Yes, to a large district in our neighbourhood, all the way from the Humber up to Louth. I do not know the district beyond that; I am speaking of the range of hills going from the Humber quite round the Wolds; that is as far as I have been in that district.

Has this range of chalk hills been improved generally in the manner you describe?—Quite so.

Is chalking considered there as an essential foundation for the improvement of the land?—Chalking is the first step to improving it.

On what tenure is the land generally held; by lease, or from year to year?—It is yearly tenancy.

On what security do the tenants engage in this large outlay for improvement?—It reaches over seven years. That is all I think they allow.

Whatever money the tenant lays out in this operation of chalking, is divided over a period of seven years; and if he quits the farm before the expiration of that period, he receives in proportion, according to the number of years unexpired?—Yes.

Is that the custom of the country?—Yes.

What other compensations are allowed to Lincolnshire tenants for improvements?—We are allowed for bones.

What is the allowance for bones?—Three years.

Is it always three years?—Always; it used to be four; it is reduced to three.

Why has it been reduced to three?—On account of the bones being ground smaller than they used to be.

And it being supposed, in consequence, that their lasting effect is not so good?—Their effect is not so lasting.

Are there also compensations for durable improvements of the peat land by claying it?—Yes, by claying it.

Have you conducted that operation on your own farm?—Yes, to a large extent.

Be so good as to describe to the committee your method of claying the peat land?—In some parts the plough will fetch up clay; in other parts the clay is eight or nine inches below the peat soil; it is then trenched, and spread upon the land every five yards.

How deep are the drains?—About 15 inches.

What is the expense of that?—35s. an acre.

On peat land, generally, the crop of wheat is very uncertain, previously to claying it?—Yes.

And of very inferior quality?—Yes.

What should you say was the produce and value of the wheat grown on unimproved peat land?—I have had wheat weighing as little as 15 stone of 14lbs. a sack.

How much is that a bushel?—It is about 52lbs.

And what would be the amount of the produce?—The produce varies according to the seasons; when the quality is bad the produce is very short; and in very favourable seasons, when the quality is good, there is a fair quantity.

Has this operation of claying the effect of increasing the produce as well as improving the quality of the wheat?—Yes.

So that what would not before been called wheat land has become wheat land?—Yes, by claying and liming.

Is that a process which has been adopted to any extent on the fen lands of Lincolnshire?—It is generally done in the lower level.

What allowance is made for that?—It expires in five years.

You have stated that you have tenant-right for chalking the wolds, for claying the fen land, and for the application of bones to both descriptions of land; have you also any allowance for oil-cake purchased for your cattle?—That is generally allowed in the neighbourhood now.

What allowance is made for that?—I believe half of the last year's cake bill, provided it has been on an equality with the three preceding years.

That is, you have an allowance of half a year's cake bill, provided there has been no increase over the average quantity of the three previous years?—Yes.

Is cake generally given to cattle in Lincolnshire?—Yes, to a great extent.

Sir J. Trollope.] And sheep too?—Yes, we use a great deal for sheep upon turnips, and also give it to sheep upon seeds.

Chairman.] Is the allowance graduated over the three years; are all those allowances divided equally?—They are divided into three equal parts.

Do you consider the employment of cake in feeding the stock essential to the amount of produce which you now obtain on those improved Lincolnshire farms?—Yes.

On what ground do you consider the tenant entitled to an allowance for the cake which he has given to his own stock?—It improves the manure so much; the better the stock is kept, the better the manure is.

Is it generally considered that the expenditure for cake does not remunerate the farmer, so far as the improvement of the stock goes which consumes that cake?—No; if we get half the benefit of the cake in the stock we are very well satisfied.

You consider that if the beast is improved to the extent of half the value of the cake which he eats, you have done well?—Yes.

Do you reckon the straw for anything that you have given the beasts?—No.

It is the practice, is not it, with many Lincolnshire farmers to keep beasts in the straw yard during the winter, eating straw and cake?—Yes, to consume the straw to make manure; and unless the beasts had cake they would be reduced in value by living entirely upon the straw.

And the manure would be worth less?—Of course the manure would be worth a great deal less.

To what extent do you consider that those various improvements which were based upon the Lincolnshire tenant-right have increased the productiveness of your light soils?—Generally speaking, I should think one-fourth.

To take your own farm, though going back a considerable period, should you not consider that you have improved it to more than that extent?—Yes; take it from its natural state, when first broken up from heath, it has almost doubled.

The produce has doubled?—I am taking it from its natural state.

You received it almost in its natural state?—Yes, very nearly so.

Has the landlord derived any advantage from those improvements?—Very great advantages.

Without enquiring into the particulars of your rent,

has your rent generally been raised?—The rent has been in one instance doubled, and is nearly as much as that now.

Are you speaking of your own farm, or of the district generally?—Of the four farms in the village.

Has that rise of rent been from the increased price of corn?—I believe from the improvements of the land.

You are aware that the price of corn has fallen very much since that time?—Yes, it has; but during that time corn has fluctuated very much. It is too highly rented at the price of corn now. If corn gets lower, it will be a great deal too highly rented.

Do you apply artificial assistance to most of the crops in your rotation?—Yes, all of them.

To every crop?—Yes, to every crop.

Describe to the Committee, if you please, in what way you apply that artificial assistance, beginning with the turnip crop?—We use a fair quantity of dung and bones for the turnip crop on the land that has been previously chalked.

You put in your turnips with dung and bones both?—Yes.

How do you feed off those turnips?—When we feed the turnips off, we give the sheep oilcake as well.

Do you draw any turnips?—A very few, just where the nets are drawn across, and by the hedge sides.

You feed off the whole of the 250 acres?—Yes.

Then the cake you use as artificial assistance to the barley crop to follow?—Yes.

After the barley come the seeds?—Yes.

Do you use any cake in feeding off the seeds?—Yes.

You mow one crop?—Some part of the seeds we do; probably a fourth.

How do you prepare the land for wheat?—If we have not a sufficiency of dung we use guano. I have used a great deal of it, drilled in with wheat.

So that, in your four-course shift, you apply some artificial means to every crop?—Yes, to every crop.

Can you furnish the Committee with the agreements on which those agreements have been made?—This is the first agreement when any allowance was made; that is, in 1826. That is the first agreement we had with respect to compensations. *(The witness produced a copy of the agreement.)*

Sir J. TROLLOPE.] Is that your own agreement?—No, it is my father's.

But it is for your own farm?—Yes, for the farm I have now.

Mr. BURROUGHES.] Did you go in in 1812?—No, 1832.

Sir C. LEMON.] Is that the usual form of such agreements?—Yes.

Is that same form generally preserved now?—It is upon a stamp upon parchment; the one I have now. I have three or four others, as the rents have been changed.

Mr. HENLEY.] Are they with more extensive allowances?—No; the one I had in 1844 is confined to the custom; the provision states that I am to be allowed the custom of the country.

Sir C. LEMON.] Does that particular agreement specify the terms?—It does.

Mr. MOODY.] When was the rent doubled as you have stated?—At the time of the agreement of 1826.

Then, on the rent being doubled, you had inserted that clause as to being allowed compensation?—Yes, for the general improvements in the land. There would be an advance of corn at that time, perhaps. My father objected to take it at the advanced rent, unless he could have covenants to protect him. He had done a great deal to the land, and the owner had wished to have all the rent that he could get; and my father objected to take it again at the advanced rent, unless he could have a covenant to protect him.

Sir J. TROLLOPE.] You hold under a non-resident landlord?—Yes.

CHAIRMAN.] You have stated to the Committee the improvements that have been made on two large districts of country, the chalk lands and the fens of Lincolnshire?—Yes.

Have improvements of a similar extent been made by the tenants on another large district called the Lincoln Heath?—Yes, I believe so.

Is it your opinion that a tenant holding from year to year, and occupying a similar farm of light land on the chalk district, could prudently engage for those various large items of expenditure out of his own pocket, without some covenant on the part of his landlord, giving him such compensation as is now given by the custom of Lincolnshire?—No, I do not suppose any man with a capital to take a farm in our neighbourhood would do such a thing.

Mr. NEWDEGATE.] Your farm most likely did not require large drainage; not very extensive drainage?—No.

In short, it is a sub-drained soil?—The grass land about the middle range below the hill was wet, and has been under drained.

It is a small section of the farm?—Yes, a small part of it.

Will you inform the Commitee whether this land requires large outlay on the part of the landlord?—For under draining, the landlord found tiles, and the tenant put them in.

And in other districts of Lincolnshire; for instance, below the Wolds, the drainage has been much more required, and the expenditure on the part of the landlord has been much larger?—Yes.

CHAIRMAN.] Will you describe to the Committee the custom of giving up land from the out-going to the in-coming tenant as to acts of husbandry?—The out-going tenant would be paid for any corn or seeds sown.

The tenant is entitled to reap what is called the away-going crop, the crops of wheat and barley?—Yes, the quantity varies very much.

Does the out-going or in-coming tenant put in the wheat?—The out-going tenant puts in the wheat.

The in-coming tenant who enters at Lady-day is entitled to the use of the seeds.—Yes.

What does he pay for the use of the seeds?—He pays for the seeds sown the previous year, and the labour of sowing them.

Who prepares the turnip land?—The out-going tenant.

The out-going tenant ploughs up the wheat stubbles?—If he agrees with the in-coming tenant. If the out-going tenant were to plough them up, he would be allowed according to the custom of the country.

Has the in-coming tenant a right of entry at the preceding Michaelmas?—The entry is on the 13th of February for the fallow land.

That would be rather late for ploughing up wheat stubbles for turnips?—Yes.

Then, in point of fact, the out-going tenant gives the wheat stubbles one ploughing in the winter, and is compensated for it by the in-coming tenant?—Yes, that is generally the case; it is to the interest of both parties. If the out-going tenant is at liberty with his horses, he is glad to do it.

Sir J. TROLLOPE.] There are cases where the in-coming tenant is allowed to come in and sow his wheat?—No, he would have to pay the out-going tenant for sowing it, also for the eatage of the seeds to the 6th of April.

Are you employed at all as valuer between the out-going tenant and in-coming tenants in your district?—No.

You do not know the general practice in other farms; you are speaking of the practice you are confined to by your own agreement?—Not exactly, but others are very similar.

One practice prevails throughout, generally, I suppose?—Generally.

Have you known any allowance made for guano?—No.

Are you aware whether it is considered a permanent or a transient manure in that district?—I do not think that has been decided. I have spoken to one or two gentlemen who arbitrate a good deal, and they would allow, but have not decided the allowance.

The principle is not established for what time guano is to be allowed for?—No.

You state that you practise entirely the four-course husbandry?—Yes.

Do you never let your seeds lie a second year for pasturage?—Occasionally, but very seldom.

In any case you would want ordinary manure before working it up for wheat?—Yes.

Do you usually manure the whole of your seeds for wheat? you say you use dung and guano?—If we have not a sufficiency of dung, we apply guano.

You do not use them both in conjunction?—No; we manure with dung, and make up the remainder with guano.

If you have 250 acres of wheat, is the whole of it manured?—We should not have sufficient to manure all our turnip land and wheat land.

But the greater proportion is manured?—Yes; the greater proportion.

Has the landlord assisted you in the great improvement you have done?—Not at all.

Has he put up any buildings?—He has found materials for building.

Have you any agreement with your landlord or his agent with regard to buildings if you give up the land?—No; this agreement of 1844 says I am to have materials found, and leave the buildings in good repair.

Whose property would those buildings be in case you quitted your occupation?—The landlord's.

You would not be allowed for them in going out?—No; nothing at all.

Has your landlord furnished you with any drainage tiles?—Yes.

Should you be allowed for any land drained on your farm if you quitted your occupation?—No; not any whatever.

Not even for land drained in one, two, or three years?—No.

Then you would be at the loss of the labour?—Yes, I should be at the loss of the labour.

And probably drawing the tiles from the kilns?—Yes.

Have you no clause in the agreement to be allowed for work in draining?—No; a certain sum of money is to be allowed yearly for drainage tiles, with the sanction of the landlord or agent.

Mr. HENLEY.] You have stated that yourself or your father entered upon the occupation of this land in 1812?—Yes.

Under what agreement or terms did you enter it?—I am not able to state as to that. I have no idea. I never saw the old agreements.

Do you know whether there was any custom in existence in that part of Lincolnshire that would have secured to your father any payment under the head of chalking, clay, or bone?—No, there were not any customs then; he could not have recovered anything.

Was there anything that you know of in the agreement under which he held the farm that would have entitled him to any such thing?—I believe there was not; I have heard him say there was not anything at all.

Do you consider that other farms in that neighbourhood were under the same, or under different circumstances?—Under the same circumstances at that time.

Was there then much improvement of the nature you have described to the committee carried on in that neighbourhood?—No, there was nothing allowed previously to that.

At the time you speak of?—No, I should think not.

Between 1812 and 1826 were there any improvements of the character you have spoken of to the Committee carried on by other parties besides your father?—Yes, generally in the neighbourhood, to some miles round about.

You have said, after distributing the operation of chalking the land, it has enabled you to produce turnips to that extent that you could winter ten sheep to an acre on the farm?—Yes.

Do you mean that to apply solely as to the effect of chalking, or that it resulted from the additional manure of bones and other articles you have spoken of?—To both; to chalking in the first instance.

And taking the whole of the mode of agriculture now practised, you are enabled to winter ten sheep to an acre?—Yes.

Then are this Committee to understand that, under the agreement existing in 1812, the tenants still made all those improvements you have spoken of?—Yes.

Without any such agreement, all those vast improvements that you have spoken of took place?—Yes, between the two periods.

Do you know at all whether the system of chalking extends beyond your own immediate neighbourhood?—Yes, it does to a great distance.

You have described these lands you have spoken of as being merely in a state of nature, and not cultivated before 1812?—Very little of it was cultivated before that time.

Have you any opinion you can offer the Committee as to the efficacy of chalk after 20 or 30 years?—I believe the first land that was chalked was in 1820 or 1821; the land does not require fresh chalking. That is the longest period I have had any put upon the land.

That is a little over 20 years?—Yes.

Do you know the general opinion upon that subject as to the future land that has been so chalked?—I do not know that there has been any land chalked a second time; there has been land done longer than that without being chalked again.

Do you know the Essex proverb as to chalk, where chalking has been carried on 100 years or more?—No.

You have told the Committee a great deal about the quantity of oil-cake consumed on the Lincolnshire farms. As to the value of that oil-cake to succeeding tenants, much depends upon the quantity of manure that is caused by it. The question refers to that part which is consumed by cattle?—Yes.

In grazing farms, with no arable land, and consequently no straw, which would be the value to the succeeding tenant of the quantity of oil-cake given to bullocks, what would be your opinion, under such a state of things as that, of the value to the succeeding tenant?—Equally as much, or probably rather more.

With no straw to make any dung?—Of course the dung that the cattle make, by having hay, would make better dung.

Supposing the manure that we see in cow-houses and those places, made without straw, put out into the

weather, how much of that would remain for the in-coming tenant?—I should think it would be in about the same proportion.

Have you seen that state of things?—No; I generally mix my manure altogether.

Speaking of places where there is no straw and no dung of that kind to mix, how would that bear upon the incoming tenant?—I should say the out-going tenant would be entitled to the same allowance in proportion.

Under those circumstances, you think the out-going tenant would be entitled to the same allowance?—Yes, I think it is equally as much benefit to the out-going tenant.

Do you think that the out-going tenant would leave as much to the in-coming tenant as where he feeds with oil-cake upon the land with sheep?—Yes; I think the same proportion of dung is left; and the greater the quantity of cake, the better the dung, the benefit being to the in-coming tenant.

The benefit is in proportion to the quantity and quality?—The quantity of cake used.

The benefit from the quantity of cake used would be in proportion to the quantity and quality of the dung made, would not it?—It would be to the benefit of the in-coming tenant, and the quantity of cake consumed by the out-going tenant would be in proportion to the quantity.

And made by his consumption?—Yes.

Is not the quantity and quality of dung very small by having no straw mixed with it; do you think the improved quality would make it equal to the larger quantity produced by having straw mixed with it?—Yes, I think it would.

With regard to bones, you have stated that there is an allowance of three years?—Yes.

And that with regard to guano?—There is no period fixed.

They do make some allowance?—Yes; I have been speaking to one or two arbitrators upon the subject, but they said that they had never had a case come before them for their decision.

Can you inform the Committee when the customs you have told the Committee about first became general in other parts of Lincolnshire?—I should think very soon after 1826.

Do you know, either from your own knowledge or communication with your neighbours, whether the great improvement which is well known to have taken place in the Lincolnshire husbandry took place antecedent to those customs or subsequent to those customs?—They took place antecedent to those customs.

Then the tenants had either that confidence in those they held under, or the profit was so great to themselves that they made those improvements without the recognition of that custom?—Yes, they did.

Mr. Hayter.] You have been asked with regard to the value of the oil-cake, when given alone to cattle and sheep; did you ever know cattle and sheep feed alone on that, without hay or straw?—No.

Do you think they could?—No, I think not.

As to the mode of feeding beasts by cake; you stated that cattle are fed in the yard with straw and oil-cake during the winter?—Yes.

And that with that oilcake there is that other mixture which makes the mixed manure more valuable?—Yes.

How do you feed your sheep during the winter and the spring?—We give the sheep cake when they are upon turnips in the winter, and we give them cake when they are upon seeds in the summer.

You stated that your seeds were partly fed off, and partly mown?—Yes.

Do you give any cake with that which you feed off?—Yes.

And how do you manure that which is mown?—We generally manure it as soon as we get the clover off.

Do you feed the clover off, or cut it twice?—We feed off the clover.

Then the whole of the seeds are fed off, either the first or second time?—Yes.

Have you got a steam engine or thrashing machine on your farm?—No.

Do you know what the custom is in that part of the country with respect to thrashing machines; to whom do they belong, the landlord or the tenant?—I believe they would belong to the landlord; the building would, at least; the thrashing part would probably be the tenant's.

You do not know, in fact, from your own personal experience or knowledge, how that matter stands?—No, I do not.

With respect to the outgoing tenant, is the outgoing tenant compensated for all the labour he does upon the farm, up to the 13th February, according to the course of good husbandry; for instance, ploughing up the stubbles to grow peas or beans?—Yes.

Is the land to the extent it is prepared by the out-going tenant compensated for by a payment to the out-going tenant?—Yes.

Any land ploughed for the in-coming tenant; the out-going tenant will be paid for all the labour he does upon the farm consistently with good husbandry?—Yes.

How do you ascertain as between the out-going and in-coming tenant, or between the out-going tenant and the landlord, which is the same thing, the amount and value of the oil-cake that has been consumed?—By producing the bills.

By producing what bills?—Of the purchase of the cake.

Then whatever quantity you may consume, you would be entitled to that degree of compensation arising from the quantity consumed?—There would be the bills produced for the last three years, and then we should be allowed for half the average of the bills.

The production of the bills is between the out-going tenant and the in-coming tenant conclusive evidence of the consumption?—Yes.

What length of time is allowed for oil-cake?—Half of the last year's cake bill, taking the average consumption of the three years.

Mr. Henley.] It must not exceed the average of three years?—No.

Sir J. Trollope.] Have you ever clayed your peat land twice?—Yes.

Do you find any benefit from that?—Yes, very great.

And you would be allowed the same proportion for the second claying that you would for the first?—Yes.

Mr. Burroughes.] What is the average quantity of cake that would be consumed upon a farm of the same size as yours?—It would depend upon the quantity of the straw and the quantity of cattle to consume it.

One man may be a bad judge of buying cattle, or waste his straw; you say the out-going tenant is allowed half the cost of the cake for the last year, provided the average quantity of three years were taken; what would be a fair average?—I produce the three years' bills.

What is the average quantity which you would consider a fair average?—For beasts of two or three years old it would be 50s. worth of cake, at the price it is now.

For how many beasts?—That depends upon the quantity of land.

Taking your quantity to be 250 acres of turnips, and as you farm under this four-course system, of course you would have 250 acres of each sort?—I have as many as 150 head of beasts.

Sir J. Trollope.] All forward cattle?—No; some are out at grass.

The forward beasts for the next year would be in the yard with cake?—Yes.

Do you winter the whole of your beasts yourself?—Yes.

Do you ever take in any beasts of other people?—No.

Is not that a common practice?—Yes.

Is it the practice that gentlemen having marsh land, so that they cannot find straw enough, give a certain portion of cake on another man's premises, he finding the straw gratuitously?—Yes; the straw is generally given, and the attendance to the cattle.

The owner of the beasts giving how much cake per head?—Giving them perhaps 2lbs., or 3lbs., or 4lbs., according to the size of the cattle. I have known as much as 4lbs.; many of the Wold farms have no grass land; they have to buy cattle to eat the straw, or take in cattle being sent with them.

Have you no grazing land to keep beasts?—I generally sell my fresh beasts in the spring.

Chairman.] Have you not heard of an agreement being made, that a man should send his cattle into the Lincolnshire tenant's yard, and that the tenant should not only find the straw, but pay for a portion of the cake eaten by the other man's beasts?—Yes, I have heard of that.

Sir J. Trollope.] To increase the value of the manure?—Yes.

Mr. Bouverie.] How do you ascertain the value of the claying and boning and the other allowances; is there a certain allowance per acre?—The bills are to be produced; the custom is to allow the last year's bones bill, provided there has been a nearly equal quantity used for the last three years.

And for claying?—You must produce the labour account and the cost of it; the same with marling. The pits are measured by a competent person, and the account is made out.

Mr. Henley.] Are the committee to understand that the customs you have described apply to the wold district of Lincolnshire principally?—Yes.

Do they apply equally to the bones?—Yes, to the lime, bones, and clay.

That is general throughout the county?—It is in my neighbourhood; I think it would extend to a great distance.

Mr. Newdegate.] The customs according to your evidence relate solely to the South Wolds?—No; I am only five miles from the furthest north point.

Your evidence relates to the wolds?—Yes.

Do they practise those customs on heath and the fens?—I am not competent to give a decided opinion as to the heath. I know several of the tenants, they use a great deal of oil-cake and bones; that is the principal tillage there for improving farms.

Even including the wolds, fens, and the heath, that would not include the whole of Lincolnshire?—No.

Can you form any idea of the proportion of Lincolnshire that would be included by that?—No, I cannot.

Not one-third?—More than one-third; probably half, to take the low land.

Taking the fens?—Yes, the fens and the wolds, leaving out the good strong land; I do not know the extent of that at all.

Then your evidence does not extend to the land of Lincolnshire, except the wolds, the heath, and the fens?—Chiefly to the chalk soils in the northern part of Lincolnshire. I should not wish my evidence to go for the heaths; I do not know sufficient of that part; but I have seen the tenants, and have some idea how they go on.

Sir J. Trollope.] On those heaths, is not it your belief that the system of management is very similar to what you describe as being used on the chalk formation?—Yes; they do not require chalk.

Except the chalking?—Yes, the four-course system.

Is not the rotation of husbandry the same?—Yes, as far as I know.

The use of oil-cake is extensive?—Yes, quite as much, or more.

Sir C. Lemon.] When a large sum of money is to be laid out in chalking or claying land in that way, is it the custom of the country to come to any understanding previously with the landlord?—No, it is left with the tenant principally.

Mr. Bouverie.] You said that the original custom as to boning was to allow four years?—Yes.

And that is reduced now to three?—Yes.

Is that under an agreement?—That is the custom; I do not know how it originated. In the 1826 agreement it was four years; three years are considered long enough now.

When you first began improving in 1812, was there any custom with respect to improvements of this kind?—No, none at all.

The custom of the country was merely confined to acts of husbandry?—That was all.

Chairman.] It appears that in Lincolnshire the custom of giving compensation for those improvements grew out of the improvements themselves which the tenants made with confidence in the continuance of their holding?—Yes.

If you were to be offered the taking of 1,500 acres of land on the chalk hills of Berkshire or Oxfordshire, and you were to be told that the custom of the country would not allow the landlord to give you any compensation for chalking the land, or marling the fen, if there was any, or for the use of bones, or for the use of cake, should you be disposed to occupy that farm in the same way in which you occupy your Lincolnshire farm?—No.

If the landlord were unable to give you a covenant, if the law did not allow him to give you any covenants, and you had to run your own risk in making those improvements, you are asked as a man of business whether you would be disposed to chalk all those 1,500 acres, and to improve them in the other modes you have described?—No, decidedly not, without covenants for compensation.

Sir C. Lemon.] Should you not look for compensation by reduction of rent in that case?—If there was any security given; the tenant must have security for laying out money. A man occupying 1,000 acres of land, and improving it, must have security. Various circumstances happen between landlord and tenant, which perhaps they do not anticipate, and neither wish to see; but they do happen, and those circumstances render it necessary. I have a friend in Yorkshire, who used a very considerable quantity of cake on 1,500 acres of land; he used more than 100 tons a year. I have known him pay £700 for bones. He had no covenants; the landlord said, "There is such confidence between us, you do not want anything of that kind. I am highly satisfied." It turned out, however, that the landlord gave the tenant notice to quit, and he went and asked the cause. The landlord said, he thought in the first instance he had too much farming; and in the second, the land would bear more rent putting upon it. The tenant said, "I think it is very hard from what you had stated to me a year and a half before, that there was no occasion for any covenants." However, the fact of the case was, that the tenant left, and there was no compensation for bones or cake.

Chairman.] Taking the case of a farm of 1,500 acres of chalk land, which may be worth, say about 12s. an acre, would not it be a very large reduction indeed upon the rent that you would require to compensate you

for the outlay of towards £3 an acre in chalking the whole?—Yes, of course it would.

Mr. HAYTER.] That security you referred to might be obtained by lease as well as by custom?—Yes.

Mr. BOUVERIE.] Your friend is not likely to do the same thing over again?—No.

Mr. HAYTER.] Supposing the landlord dies, or supposing the property is sold, that same result of insecurity of tenure, in case of tenancy from year to year, would arise?—Yes; there is such an uncertainty, it is not safe at all; it is no matter how good a landlord he may be, there may be circumstances arise that he cannot avoid.

Good husbandry depends upon security of tenure, granted by lease or custom?—Yes.

As to the drainage; in your agreement with your landlord, there is a provision made with respect to drinage?—Yes.

That provision is, that the landlord is to pay for the tiles, but that the sum the landlord is to pay is not to exceed £14 a year?—Yes.

And the landlord paying that limited sum in respect of tiles, all the labour of the draining is done by the tenants?—Yes.

Is that the custom, or is it only in your particular instance by agreement?—It is mostly the custom in our neighbourhood; in one case they drain upon a fourteen years' lease; the tenant finds the tiles and labour, and it runs out in fourteen years.

Sir C. LEMON.] He does the whole himself.—Yes.

Mr. HAYTER.] That is by contract?—That is by contract.

Do you know any custom as to dealing with the property between landlord and tenant, in respect to drainage in Lincolnshire, where the result you have spoken of has obtained anything like custom?—No.

To what extent do you say this custom, such as it is, prevails?—I do not know; I cannot say as to drainage; to a very little extent.

As to the compensation for oil-cake, and so on?—I have said between the Humber and Louth, which is 40 miles.

Mr. NEWDEGATE.] It appears from your evidence that the custom in Lincolnshire was founded upon a contract from year to year?—Yes.

And the custom in fact is not granted upon a lease, but from year to year?—Just so.

Sir C. LEMON.] What length of lease would you think a sufficient protection to the tenant, so as to place him pretty nearly upon equal ground, the same as if he had the protection of custom?—He would require a 14 years' lease; it must take four or five years before the tenant could get over the land in his regular courses; therefore, if he took it for 7 or 10 years he would not have an opportunity of deriving all the benefit he ought to expect from his improvements.

Having a 14 years' lease, he would have the same inducement to improve his farm as if he were subject to that custom?—That would allow the improvements to be carried out.

Evidence of Mr. THOMAS CALVERT BEASLEY.

CHAIRMAN.] Where do you reside?—At Harston, near Grantham.

What extent of land do you occupy?—I occupy 900 acres myself.

What description of land is it?—It is land of all descriptions; one-third of it is in pasture, a portion of it is strong clay, and the remainder is red land upon the rock.

Sir J. TROLLOPE.] It is actually in Leicestershire, is not it?—Yes; my own farm is actually in Leicestershire; but that description of land runs into Lincolnshire to the north of Grantham till it is bounded by the Witham.

CHAIRMAN.] Are you well acquainted with the south of Lincolnshire?—Yes, I have business all over the county, but more particularly in the southern division of the county.

Are you well acquainted with the Lincoln heath?—Yes.

Have you the management of properties in the neighbourhood?—Yes.

What are the compensations for improvements that belong to the tenants?—The usual compensations in South Lincolnshire are as to tillages, manure, and draining.

First, as to the outlays for the purchases?—The whole of the last year's bill for bones is allowed when only a crop of turnips has been taken; one-fourth part of the cake bill is allowed, which is ascertained by producing the bill for last year. We have found it desirable to promote the tenant-right as much as possible. We are satisfied with the one year's cake bill, one-fourth as I have said, which is allowed to the outgoing tenant. That is the practice in the southern part of the county.

Sir J. TROLLOPE.] You are allowed for the whole of the bones?—Yes, for the whole of the bones used for the turnip crop for the last year.

CHAIRMAN.] What allowance is made for claying the fens?—There is very little marling or claying in my part of the country, on property I have anything to do with the management of. I am very well acquainted with the eastern part of Lincolnshire, where claying is carried on to a considerable extent; there the outlay is spread over four years; one-fourth is deducted for every year.

What is the expense of claying the land? It varies with the land, according to the depth of the clay. Upon the belt of the Witham the peat is deeper, and it is more expensive to get down to the clay—it costs 40s. an acre; in other parts of Lincolnshire it may not cost more than 30s. or 35s. an acre.

Does that outlay occasion a great improvement in the clay land?—Yes, it is essential to the farming of peats; indeed, they are so much improved by it that that land is not worth farming without it is done.

It could not be called wheat land?—It grows wheat of very inferior quality. The claying the land improves the quality more than the quantity, but the quantity is very greatly increased with the improved quality.

It gives more certainty to the yield?—Yes, it is not then so dependent upon seasons.

Sir J. TROLLOPE.] The peat land would not grow wheat unless it was clayed?—It would grow it, but of inferior quality; the seeds lose plant in the spring.

CHAIRMAN.] The land is honey-combed by the frost?—Yes, and the plant is worked out of the ground.

Is that mode of improving peat land going on extensively?—Yes, it has gone on so for the last ten or twelve years; a very little of the fen remains to be clayed; it is nearly all done once over, I think.

How soon would it require to be done again?—Some of the best and most spirited farmers are beginning to do it again, sinking the trenches a greater distance; taking up half the quantity they used in the first instance.

How much, in the first instance, did they use per acre?—About 100 cubic yards on an acre was thrown out.

It is now about 50?—Yes.

That gives a great amount of employment to agricultural labourers?—Yes; it has been their chief employment in the winter, in the fens.

What wages do they have?—Two shillings a day now; that is work generally done by measure, that will enable them to earn about 2s. 3d. to 2s. 6d. But the day's wages are 2s. a day.

Great improvements have been made in the heath lands of Lincolnshire within your recollection?—Yes; very great improvements.

What is the extent of that heath land?—The South Cliff, from Lincolnshire to Grantham, is 26 miles.

What is the extent of Lincolnshire heath northwards?—The North Cliff, from Lincoln towards Barton, is 34 miles. The chalk is nearer to the middle marsh. The wolds eastward towards Louth, and southward to Horncastle.

Is this long district of heath land entirely dependent for its present productiveness upon the use of artificial manure and artificial food for cattle?—It has been entirely dependent on artificial means; but that land has now become so productive that it supplies in a greater measure than it did formerly the means for supporting the crops; a much greater quantity of straw is grown now than was grown formerly; and that being properly made into manure, supplies to a greater extent now than formerly the manure necessary for the cultivation of the land.

Are the farmers generally still in the habit of using large quantities of bones and cake?—Yes, almost without exception.

Which you consider essential to the good farming of that district?—Yes.

What do you consider has been the increase of the produce of the crops in consequence of the superior farming?—The increase has been from almost nothing to 32 and 36 bushels of wheat to an acre; it was formerly little more than a rabbit warren, only 35 years ago.

You state four quarters as the average produce per acre?—Of the best cultivated lands; I do not mean to say that the county of Lincoln produces an average of four quarters to an acre; all the well-cultivated lands produce at least that quantity.

In good seasons would they produce more?—In good seasons they produce more; in the eastern parts of Lincolnshire considerably more; the fens.

What is the custom on the heath land as to payment for acts of husbandry between outgoing and incoming tenants?—Upon a tenant receiving a notice to quit, the usual plan where there is a good understanding between the landlord and tenant, the tenant receiving notice applies to the agent to know whether he is to continue to cultivate the land in the way he has been in the habit of doing; and if the agent has confidence in him, and he is not leaving from any fault that the agent or landlord has to find with him, he is told to continue the same manner of cultivating, with the assurance that he will be paid for all acts of labour performed between Michaelmas and Lady-day, that is, sowing wheat and ploughing the land ready for the turnip fallows; those are the principal acts of husbandry. He is paid for the herbage upon the land that is sown with wheat seed.

Then are the Committee to understand you to say, that if the agent has not confidence in the tenant, and does not empower him to go on and farm in the usual manner, the tenant would have no claim for manure used after the time of his notice?—Yes; nor could he have any claim for the wheat, if sown in opposition to the instruction of the landlord or his agent.

Therefore, the landlord's permission to go on cultivating is necessary after the notice to quit has been given?—Yes.

Can you inform the Committee as to the right of the incoming tenant to enter to sow the wheat?—Usually speaking, the tenant farms under an agreement that gives the incoming tenant the right of entry after a specified time; after the 10th of October for sowing wheat, and after the 1st of February to prepare the land for the spring corn; for peas and beans.

Then what time have the incoming tenants for ploughing up the wheat stubbles?—After the 1st of February, on paying for any sheep keeping there may be at the time; any grass or pasture there may be amongst the stubbles.

Mr. HAYTER.] At what time are you to be understood to say that the lease ends?—On the 5th of April.

When is the notice given to quit?—Before the 10th of October.

Then the outgoing tenant has rights from October to to April?—He has no rights for acts of husbandry without permission from the landlord or his agent.

Supposing there was a hostile feeling between the outgoing tenant and the landlord, then the outgoing tenant has no rights?—He must cease all acts of husbandry.

He does not sow his wheat?—No.

He does not manure his land for wheat?—No.

The land is, according to the custom, left abandoned as to cultivation from October till the 1st of February in such a case?—Till the 5th of April.

Sir J. TROLLOPE.] Have you ever known of a case of that kind?—Yes, I have known it happen once.

Mr. HAYTER.] You were understood to say that the custom is, that supposing a hostility to exist between the landlord and the tenant, then on the 10th of October, he having notice to quit, he does quit upon the 5th of April, and that the incoming tenant has no right to come upon the land until the 5th April; is that so?—Yes.

CHAIRMAN.] Has not the incoming tenant a right to sow the wheat?—There is usually a clause in the agreement to that effect.

Mr. HAYTER.] Independent of the agreement, what is the custom of the country if there is no agreement; are the Committee to understand you, that the incoming tenant has no right to come in till the 1st of February?—Not till the 5th April.

The land remains out of cultivation from the 10th of October till the 1st of February?—Yes, from the 10th of October to the 5th April.

Sir J. TROLLOPE.] Would not the outgoing tenant be compelled to sow the wheat?—No, he would not be compelled to do anything after receiving notice to quit.

Mr. HENLEY.] You have said that by the custom of Lincolnshire the incoming tenant or landlord would not have a right to enter to sow the wheat before the 1st of February?—Not till the 5th of April.

Though no agreement existed?—No, he would not have a right to come before the 5th April.

Would the incoming tenant, entering upon the land after the 1st of February, have any right to make any use of the manure upon the farm?—Yes, all that was found upon the farm; all that was made upon the farm from the produce of the farm, from the straw grown upon the farm.

Mr. HAYTER.] In that case the outgoing tenant would be allowed those compensations that have been referred to for bones, and lime, and oil-cake, and the other matters?—Yes.

He would have no compensation for anything that took place between the 10th of October and the 1st of February?—That would only refer to acts of husbandry; if he continued to consume oil-cake, he would be entitled to be paid for all the cake used up to the 5th of April.

Because the incoming tenant would be entitled to the manure?—Yes.

Sir J. TROLLOPE.] You have a good deal of land under your superintendence of a very wet nature, have you not?—Yes.

What is the custom with regard to draining in that district?—The custom is to allow the outgoing tenant for the expense incurred in draining during the five preceding years, divided over five years.

Is it the custom to allow the whole expense he has

been at?—Yes, the whole expense he has been at, if he has found the tiles: if the landlord has found the tiles, he is allowed only three years for the labour. The whole expense of putting in the tiles is divided into three, and one-third is taken off every year, after the work is performed.

What is the custom with regard to buildings put up by the tenant?—The landlord invariably puts up the buildings.

Are they all put up by the landlord throughout the estate?—Yes.

And are they of a very superior description?—Yes. of a very superior description.

Do you know of any instance of a tenant putting up buildings?—Sometimes tenants, where they have great confidence in the landlords, when they want extra buildings erected, may put them up, and then they will put them up at their own cost.

Have you ever known any claim to be made by outgoing tenants for buildings which they have put up?—No; but I have known landlords to come forward when tenants have been going from one part of the estate to another, and make some allowance where the tenants have made great improvements.

Have you ever known any dispute or litigation to arise upon that subject?—No.

Do you consider the state of tenant right as now existing in Lincolnshire to be in a satisfactory condition? I believe that both landlords and tenants are perfectly satisfied with the allowances made in Lincolnshire now.

Have you ever known a lawsuit to arise out of that?—Yes, unfortunately more than one.

Do you consider that the tenantry of Lincolnshire require any further protection by law?—They would be glad to have the custom which now prevails in Lincolnshire secured to them by an Act of the Legislature.

That is, that they want to have it made valid by law?—Yes.

But they want no more than they have now?—They are quite satisfied with the allowances now made; but what they want is, that when the award shall have been made, it shall be final.

In the district with which you are more particularly acquainted, is there not a considerable portion of the poorer and more inferior land occupied by tenants of a very different description to yourself and the preceding witness, that is, by a lower class of tenantry?—That question is put in rather a delicate way. There are certainly smaller occupiers of land than ourselves.

Small occupiers without capital?—Yes, they have not the same power to farm.

Is not there some considerable portion of that land cultivated in a very inferior manner, or at all events not with this high course of husbandry you have described?—The small farms are not nearly so well cultivated.

Have you not known in many cases farms given up by that smaller class of tenants in a very inferior condition?—Yes; very much so.

Is there any summary remedy by which the landlord can recover for damage done, speaking as a valuer of the tenant-right; are there any means of deducting from the allowance made, whatever the valuer may conceive to be right for dilapidations?—Yes.

Have you ever known in any case that a sum of money has been awarded by an arbitrator, and has gone directly to the landlord for cross-cropping or bad husbandry?—I have known one case in particular where it has gone to the incoming tenant. In that case the award for dilapidations was deducted from the tenant-right, which the incoming tenant would otherwise have had to pay.

Have you known cases where you have had to value farms for a fresh letting, where you have had a difficulty in getting tenants to agree to pay the same rent which the preceding tenant has paid, where dilapidations have taken place?—I have known cases where the landlord has been obliged to make considerable allowances in consequence of the mismanagement of preceding tenants.

Have the preceding tenants paid for those dilapidations?—Too frequently in such cases the preceding tenants have not had any power of paying. They very seldom leave farming unless they fail.

Consequently if the law gave a power to an outgoing tenant to obtain the outlay that he had been at from the landlord, would the landlord be equally protected under similar circumstances?—The law would protect him, and the custom would protect him, so long as there is an allowance for tenant-right. The incoming tenant would be advantaged by the employment of the outgoing tenant's capital, as the land would be left in a much better condition. And the greater the capital employed on the land the greater is the security to the landlord, because he would either have his farm well managed, or he would be able to recover for dilapidations if there were any. Supposing a tenant to have cultivated his land well, consuming a considerable quantity of cake, and using a considerable quantity of bones, but neglected the buildings, or the gates or the fences, then the landlord would have security that he should be paid for the dilapidated state of the buildings, gates, and fences out of the tenant-right that was due to the outgoing tenant for the artificial means employed in managing the land.

Even amongst the small tenantry is not there a great spirit of improvement going on?—Yes, there is.

In draining more particularly?—Yes, the landlords are generally assisting in the draining, and that is the foundation of all good farming.

What is the Lincolnshire practice as to furnishing tiles?—The landlord has generally given the tiles to the tenant. The landlords are now becoming wiser than they were; they keep some person they can depend upon to put in the tiles under their own superintendence.

Is that the practice on the estate for which you are the agent?—Yes.

Do you charge a per-centage upon that?—Yes.

What is the rate of per centage?—Five per cent. when the landlord does all the work.

Mr. HAYTER.] Is the reason why the tenants of Lincolnshire are anxious to have the custom determined by law, because there is some degree of uncertainty about the custom itself?—There is not perfect uniformity as to the custom. They are not so anxious to have the allowances certainly defined as to have them secured without lawsuits. We are most anxious that it should be all settled by arbitration.

CHAIRMAN.] You refer to the mode of recovering the tenant-right rather than to fixing the tenant-right itself?—The tenant-right is fixed by custom in the way that I have described. The effect on the cultivation of the land must be very advantageous to the landlords.

Mr. HAYTER.] What you want is simply a cheap court of arbitration, the custom being the law; a court in which any difficulties that may arise may be determined?—I think the arbitration would settle all the difficulties; what is wanted is the means of recovering the amount of the award when all the difficulties are settled; that the award should be paid by the incoming tenant or the landlord.

Is not that the case now?—It is not the case now without instituting a suit.

Is that because the custom is unascertained?—No; I know two large and respectable tenants who are at this moment waiting for the amount of their award; that award has been made for years, and they have never yet recovered the amount, nor can they without proceeding against the landlord in a court of law, and that they do not choose to do, the expense would be so great.

Sir J. TROLLOPE.] Would not the suit be against the incoming tenant, and not against the landlord?—No, against the landlord.

Mr. HAYTER.] Still it reverts to this, you want really a Court of Arbitration?—Yes, to have all settled by arbitration.

The custom is defined if you could get competent judges to decide upon it?—The tenant is perfectly well satisfied with the custom, and will go on improving the land even with the means he has at present, with the custom he has now; but he would be very glad to have the right determined.

Mr. BOUVERIE.] Is there any doubt of the legality of the custom or practice of law?—Those customs are not at present made valid by any act of the Legislature; they are the customs of the country, and would probably be held to be law when the custom has existed for a number of years.

Have those customs ever been contested?—Yes; they are not allowed upon some estates.

Sir J. TROLLOPE.] You have known some suits in relation to them?—Yes.

And have not the courts invariably upheld the valuers?—Not in every point; but where the customs have been established for any length of time, the courts have always upheld the customs of the country; those particular customs.

Mr. BOUVERIE.] Those particular customs you speak of have been upheld?—Yes, as to the allowance for bones, and marling, or chalking.

Irrespective of any agreement?—Yes, irrespective of any agreement; I am not aware of any case in which an account for cake has been brought before the court; generally speaking, the judges refer it to arbitration.

Mr. HAYTER.] Are you acquainted with the customs in other districts?—Not much.

Do you want to have a Court of Arbitration appointed for other customs as well as for the Lincolnshire customs, or only for the Lincolnshire customs?—For the custom of every county, that the tenant should be satisfied with whatever is the custom of the county.

Supposing the custom to be established, what you wish to have is, that the benefit to be derived from that state of the law should be obtained by a cheaper Court of Arbitration?—Yes.

Mr. NEWDEGATE.] Are the Committee to understand from your evidence that the custom is not satisfactory as it exists?—The arbitration itself is satisfactory, but when we have arrived at the amount of award, it is not always secured to the outgoing tenant.

Would not it be necessary, supposing that you were to give the decision of this arbitrator in a court of law, to have the items upon which such decision is founded specified more accurately than it is in all cases now?—It might be very difficult to define exactly what the allowances were.

The question now put refers to where custom is confirmed?—There would sometimes be very great difficulty in defining the customs. In Lincolnshire they are confined to the four or five points to which I have already alluded; it would therefore be a very simple act of the legislature to settle it for Lincolnshire. But in other parts of the country tenant-right varies very much from that of Lincolnshire; Nottinghamshire, for instance, where a much greater allowance is made to the outgoing tenants for green crops; he is paid for the whole value of his turnip crop.

Sir J. TROLLOPE.] The custom of the country being so well ascertained and understood, and universally agreed to in Lincolnshire, the practice is, on many of the best farmed estates, to farm without any lease or agreement of any kind; simply upon the understanding that there is this custom?—Yes.

And it is left to the discretion of the tenant to act upon the best principles?—Three-fourths of the farms with us are farmed without any lease or agreement; the property of all the large landowners is so farmed.

Mr. NEWDEGATE.] You would wish the award of those arbitrators to be uniform?—Yes.

Then would it not be necessary, if you were to have it uniform and give it the force of law, that at all events those great and permanent improvements which you have specified should be defined in the schedule by them upon their award?—I think the customary allowances would be sufficient; it would not be necessary to define them in any legislative enactment.

The result of giving their award, then, the force of law would be this, that you would give their decision the force of law without the power of testing it?—Inasmuch as one arbitrator would be appointed by each party, that would be a test.

The effect of making their decision valid in law would be to make their decision final without the power of examination or appeal?—Yes.

Mr. HENLEY.] You have stated that you have been largely engaged in valuations?—Yes.

What course do you take to ascertain the quantity of cake purchased and consumed?—The person who is appointed by the outgoing tenant produces the bill for the cake for the last year, and if it is justified by the respectability of the tradesmen (and the dealers in that cake are men of character and standing amongst us); if the cake bill comes from a man of that description, we allow it without any hesitation as evidence.

Of course that is evidence only that a certain quantity of cake has been purchased; do you go into any inquiry as to its consumption?—No; I am happy to say that with us there is so much confidence between the landlords and the tenants that we do not suspect parties of purchasing the cake and bringing it upon their premises without intending to consume it; cake is not a thing that could be secreted or sold off again.

Supposing a tenant is occupying 300 acres of his own land and 300 that he rents, and he purchases a certain quantity of cake, do you go into any inquiry upon what portion of those respective farms that cake has been consumed?—Yes; we take the evidence of the shepherd or the man who tends the cattle in the yard; in that case we do take evidence.

In the other cases you do not take evidence?—We are at liberty to take evidence if we have any doubt.

The practice is not to do so?—The practice is not generally to do so.

You have stated that if there was a court of arbitration it would meet the views of occupiers of land in Lincolnshire to give a certain and easy mode of recovering the amount of compensation when agreed upon?—Yes.

Is there any advantage in a tenant-right that could not be secured by an agreement between the tenant and the landlord?—The tenant would still have to enforce the agreement; it could be secured by agreement.

Is there anything which the tenant-right now gives to the tenant in Lincolnshire which the tenant either in Lincolnshire or any other part of England could not secure to himself by agreement with his landlord?—Of course he could secure it by agreement.

What period of years, in your judgment, would be necessary to enable him to secure the same amount of tenant-right that the Lincolnshire farmer now has?—Anything upwards of 14 years would be sufficient.

That would be sufficient in your judgment?—It would be sufficient to induce the farmer, who would take a farm under such circumstances, to make the same improvements as he now makes with the tenant-right.

That is, chalking, claying, the bone manure, and the

oil-cake; you say that for that a lease of 14 years would be a sufficient term?—He would derive all the advantage from that, I think, which his outlay would lead him to expect in that term.

Is not it competent to the party making the agreement that he may secure in that agreement the mode of repayment for the improvements he has made?—Yes.

What reason is there why those advantages may not be as well secured by the simple process of agreement as by the more difficult process of legislation?—I do not know any reason against its being secured, but the tenants would not be so likely to seek security by agreement: they would not be so likely to attend to their own interests. I think that those allowances are important to the whole community, particularly to the consumer, as promoting good cultivation of the land, and it is not desirable that men should farm land without being secured full compensation for any unexhausted improvements, because, if they do not make the improvements, the produce of the land is much less.

Is there any reason in your judgment, and if any, what, why the tenant cannot have the same security by agreement that you now propose to give by legislation?—There is no reason in the world certainly, in my judgment, why it should not be settled by agreement. The only reason is that the farmer neglects to have the agreement before he enters upon the land.

How far has your knowledge of Lincolnshire extended back?—I have farmed there since 1816.

During the earlier part of that period did not very great improvements take place in Lincolnshire?—There has been much greater improvement since than before that time.

Do you conceive now that there is room in the best cultivated districts for much greater improvements than have taken place?—I have farmed my own farm with very great confidence in my landlord for a period of 30 years, and I think it has been more improved within the last seven years than all the time before.

And in the next seven years probably you may still further improve it?—I shall improve it still more. I have largely increased the produce, but I think I can increase it still more.

That has taken place under the usual tenancy without legislation?—Without agreement or lease.

And having gone on as you have described without legislation, for what reason do you think you would go faster if you get legislation?—I should not go faster, but a very considerable number of my neighbours would go faster. I think it is only fair to place them in that position, that they would feel that they were to be paid for any unexhausted improvements that they had made, if they were obliged to quit. I think a man who had a family would feel more confidence in farming the land, if he knew that his widow and children, if he died, and they could not continue the cultivation of the farm, would be paid for any unexhausted improvements.

And yet you think that although they are so anxious and fearful lest the widow and children should not get the benefit of the improvements, they do not take care to secure themselves by agreement?—They do not.

Sir J. TROLLOPE.] You do not ask it for yourself?—No, I am quite satisfied, and so, I believe, are the majority of the Lincolnshire farmers.

Mr. HENLEY.] The power to receive compensation upon quitting a farm for certain improvements done may as well be introduced into an agreement for a year as a lease?—Oh, yes.

There would be no difficulty in it?—No; I have a great objection to a lease; I would neither farm under a lease, nor let my land under a lease.

There is no practical difficulty in introducing compensation of the kind you state in agreements from year to year?—No.

Sir T. TROLLOPE.] Do any landlords object to give those agreements if asked for?—No; some of the smaller estates in Lincolnshire are farmed under a lease.

Have you, as agent, been ever asked for a lease?—No.

CHAIRMAN.] Why do you object to a lease?—Because, at the end of the term, though permanent improvements of course cannot be taken out of the farm, the high condition of the land is generally diminished very considerably.

Is not it generally considered that where there is a lease, the first part of the term is spent in getting up the condition of the land, and the latter part in lowering it?—Yes, in exhausting it.

Mr. HENLEY.]—You have stated to the Committee that the practice of the Lincolnshire valuers is to set off dilapidation in buildings against tenant-right; do you extend that set-off to the state of the farm as to clean husbandry?—Yes.

The question refers to the clean state of the fallows. If the farm was left in a very foul state, would that enter into the calculation?—It would never be so unless there had been cross-cropping or gross neglect, and then reductions would be made.

Mr. NEWDEGATE.] You have stated that the arbitrator would make allowances for dilapidations by bad cultivation?—Yes.

Supposing a farm to be let to a tenant at a lower rent, with a view to its improvement, and that the tenant threw up the farm without making those improvements, would the valuer in that case make any allowance for the rent that was reduced on the faith of those improvements, which improvements had not been effected?—I could not conceive that such a case could continue any time where the landlord or the agent paid proper attention to it, because, if I, as the agent for the landlord, let a farm at a reduced rent on the condition that the land should be improved, I should take good care that that tenancy did not continue more than two years, if the tenant taking the farm from me on those terms failed to make those improvements.

Supposing you had let that farm under lease?—If there was no contract or lease, the tenant would still be bound to pay the landlord for those dilapidations.

How would they be ascertained?—By the arbitrator.

Then in the award of the arbitrator would the specific injury be stated?—The arbitrator would first state what allowances should be made to the outgoing tenant for the customary allowances, and the reductions from it as the value of the dilapidations.

Would he furnish that under a separate title?—Yes.

And you consider that essential to the due and fair performance of his duty as arbitrator?—I think it is important that compensation should be made to the landlord for farms left in a dilapidated state, quite as much so as that the proprietor of the farm should make allowances for improvements.

And those items should be entered upon the award of the arbitrator?—Yes.

Mr. HAYTER.] Is not there a custom prevailing, or is not it the law, that the landlord has a claim for dilapidations?—That, I believe, is chiefly confined to cross-cropping, or neglect in cleansing the ditches, and repair of the buildings.

The principle of cross-cropping is directly contrary to good husbandry?—Yes.

Therefore, the landlord for anything in the shape of bad husbandry, though not cross-cropping of the land, would be entitled to compensation?—A man must very much neglect his farm to let it get out of condition without cross-cropping. It is possible.

According to the law and the custom, the landlord is

entitled to redress against his tenant for managing his property contrary to the course of good husbandry?—Yes.

Sir C. Lemon.] The custom of tenant-right varies very considerably?—It varies between North and South Lincolnshire, and between Nottinghamshire and Lincolnshire. It is nearly uniform in South Lincolnshire and throughout North Lincolnshire.

Those districts are not very large—Yes; half of the county of Lincoln is included in South Lincoln.

Do you not think that if an attempt was made by law to define all those customs or reduce them to one scale, that it would alter the relative positions of landlord and tenant in a great many cases?—It would be an interference which would not be acceptable to certain landlords and tenants to make the custom uniform in all counties.

That would produce great confusion?—It would cause great confusion to make the customs of Nottinghamshire the same as those of Lincolnshire.

You would not look to any alteration or defining of the customs, but merely the giving of greater facilities in law to determine the rights of the respective parties?—Yes.

Chairman.] You have been asked whether a farmer would farm equally well in another county where those customs of compensation do not prevail, whether he receives an undertaking from his landlord to make those compensations or not; are you aware that landlords are held by legal opinion not to be capable of giving those agreements if they are owners of settled estates, where they are not supported by the custom of the country?—They must be supported by the custom of the country, or the owner of a life estate is not able to make such agreements without the consent of his successor; it is usual for the father and the son to sign the leases where they are granted at all.

You stated that you object to leases; without entering into the grounds of your objection, do you conceive that a lease alone, without any compensation at the conclusion of it for the use of artificial manures and artificial food, would insure the landlord that he would receive back his estate in the same condition?—I do not believe it would.

Would it not be the plain interest of any man of business as a tenant, if he looked forward to the determination of his holding at the end of four years, to cease the employment of those artificial means during the last two or three years?—Yes, it would have that tendency.

Would not the tendency be, notwithstanding the lease of 14 or 21 years, that the landlord who had given a mere naked lease would receive back his property in a worse condition than in the case of a man holding his farm and giving it back with those covenants of compensation at the end of the same term?—Yes; I believe that the landlord who has granted it from year to year, subject to allowances of that sort, would receive the farm back in better condition than where he granted a naked lease of 21 years.

In order to clear up an answer you gave as to compensation for draining, will you be so good as to state what that custom is?—When the landlord finds the tiles, and the tenant only finds the labour, the custom is to divide the expense into three years. As to the cost of the labour, if he has had three crops he receives nothing for that. If he has only had two crops he receives one-third of the amount, and if he has only had one crop, he receives two-thirds of the amount.

And how is it regulated if the tenant has been at the whole expense of the draining?—It is divided into five years in the same way.

The Earl of Arundel and Surrey.] You have stated your objection to leases, and you have also stated that you have not known of any lease having been asked for in your neighbourhood; is that the general feeling of the county of Lincoln, that they would rather not have leases?—Yes.

Do you think that any difference in the feeling has taken place in that respect of late years?—No; they would prefer the custom of allowances to having leases. I have heard good farmers say that they did not wish for leases; they prefer farming as it is.

Do you think the absence of legislation would produce any feeling on that subject?—I think they would rather prefer to have security by way of lease if they should not have the tenant-right.

Mr. Moody.] You were understood to say that you were satisfied with the present system of arbitration?—With the present allowances, I said; with the manner in which those allowances are made. The sum to be paid is arrived at now, but we are not satisfied with the manner in which we are to proceed to procure this advantage.

You do not wish that public arbitrators should be appointed for counties?—No.

The term "court" is not quite what you meant?—No.

Chairman.] The object of the Lincolnshire farmers is an easier mode of recovering their repayments?—Yes.

Mr. Moody.] Could not that be effected by lease?—If all landlords would submit to the customs which the best landlords, that is, the kind and liberal landlords of a county do agree to, so that all the landlords in a county should be bound by a majority, that might be so.

Sir J. Trollope.] The difficulty exists in the case of land belonging to tenants for life, and holdings under the Church?—Yes, the Church holdings are without those allowances.

It is in respect of those holdings that it is found to be inconvenient in its working?—Yes.

Mr. Hayter.] Is there much of that property in Lincolnshire?—Yes.

Then the custom is not a universal custom introduced even into the district in which it prevails?—No.

It is not a custom prevailing over any defined extent of country, as there are excepted places where it does not exist at all?—The custom for drainage is not followed by all landlords in the part I have spoken of; it is not a customary allowance made by all landlords, but for bones and manure it is customary with all.

That is a custom which is merely occasional, and not universal?—I think it is so far the custom that if the tenant were to proceed against his landlord at law, he would be upheld by the courts.

Are you aware of any actions having been brought, and of the customs coming into court, and of the customs being maintained?—They have been generally referred.

Do you know of any case where they have not been referred?—No, the custom has always been upheld; when it has been referred, it has been referred to counsel as arbitrators, and they have always admitted the custom.

Sir J. Trollope.] Do you know anything of the Scotch mode of letting land?—No.

You do not know the mode of re-letting the farms when the leases run out?—No.

You do not know that they are uniformly let by tender to the highest bidder?—If we took a farm for 14 or 21 years we should expect at the end of the term that there would be a revision or a change of tenant.

Do you not know that many estates in Lincolnshire have gone on from father to son without lease or agreement?—Yes, or increase of rent either.

You do not know whether leases do prevail?—No.

You cannot answer the question whether tenants do or do not often change in those districts, or in those counties where they farm without leases?—Our tenants in Lincolnshire are never changed unless they die, or

become unfortunate in business, or without there is gross neglect.

Sir C. LEMON.] What is there in the nature of a lease to cause the change of tenantry?—At the end of the term we expect, as a matter of course, that the bargain is at an end, and a fresh bargain has to be made; but if it is from year to year, neither party think of a change.

Mr. HAYTER.] Is there any specified time when a variation in the rent takes place, or how is it, that under agreement from year to year, any period for re-considering the state of the rent arises?—I have never known a general raising of the rents in Lincolnshire since the year 1813, and then the high price of corn induced the landlords to have the estates re-valued.

Is the farm you occupy your own?—No.

Has the rent of that farm varied materially?—Not since 1813 one shilling.

In what way does the landlord obtain any benefit from those improvements?—He has laid out no money in my case. I have laid it out myself, having confidence in my landlord, and the rent has not been raised. Where the improvements have been made at the expense of the landlord in those cases in which I act as agent, there has been a charge of 5 per cent. increase. So far there has been an increase of rent.

Do not the fact of a more dense population, the circumstance of a railroad coming there, the growth of a town, and various incidents of that sort, give additional value to a farm, independently of any improvements that may result from the application of the tenant's capital?—I think there has been no increase of rent except where land has been brought into fresh cultivation.

When is the time that the landlord's interest commences, if from the year 1813 up to the present time there has been no alteration of the rent; you state that there has been a great improvement in the value of the property, under the system of an agreement from year to year; how is it that, under those circumstances, the rent has remained unaltered?—In 1813 the greater part of South Lincolnshire was re-valued and re-let, in consequence of the high price of corn; there has been very little chance of increase of rent since then, inasmuch as corn is very little more than one-third of what it was then, when it was £6 10s. a quarter, and this year it is not more than 50s.

Do you know whether the rent has always kept the same, and has always been paid the same by the tenants, without any reduction?—There were reductions in 1822 for a few years, when there were very low prices.

Do you know the extent of those reductions?—I believe more than 20 per cent.

Sir J. TROLLOPE.]—Were those reductions temporary or permanent?—They were temporary.

And were they put up again?—Yes. The low prices lasted for a short time, and then there were returns of rent made to the tenantry, but after things resumed their usual level in 1827 or 1828, when there were more remunerating prices, those returns were not made.

Mr. HENLEY.] Have you seen the bill that was introduced into Parliament last year?—Yes.

Have you seen the bill introduced this year?—No.

Were the provisions made in the bill of last year such as in your judgment would have secured the mode of recovery you think necessary?—Yes, I thought it would be so; only I thought that the enactment should be compulsory in all cases, and that it should not be left to the landlord and the tenant.

That is as to the practical operation?—Yes.

What is your opinion of the mode proposed in that bill; as to that, would that bill have been satisfactory?—Yes.

Do you know any cases, in your 30 years' practice, where a tenant has been put out of his farm in Lincolnshire by notice from his landlord, without any allowance being made for improvements?—I do know of instances without the allowances being made, which are generally made according to the custom of the country.

Have many such instances occurred to you?—No, not many; only one has come under my own observation that I know much about; I only know one strong case.

Mr. BOUVERIE.] Was an action brought in that case?—Yes; and it was referred to counsel to arbitrate.

What was the result of the arbitration?—It was in favour of the tenant; the allowances made according to the custom of the country were awarded to the tenant.

What allowances were they?—What I have been describing as to manure and the tillages.

There was no written agreement in that case?—No.

Mr. NEWDEGATE.] The difficulties you have known to arise in cases in which you think that compensation is required, have been principally cases of church property, where the rent amounts to dead payment, and the cases of dividing or small properties?—Yes.

In the large properties it is generally that the more liberal system prevails?—Yes, it does prevail in the larger properties.

The Evidence of MR. CHARLES STOKES.

You are an occupier of land near Derby?—I am an occupier of land in the county of Nottingham, within 12 miles of Derby.

In South Nottinghamshire?—Yes.

To what extent do you occupy?—I farm 420 acres.

What are the districts you are chiefly acquainted with?—South Nottinghamshire, North Leicestershire, and South Derbyshire.

Are you in the habit of valuing between out-going and in-coming tenants?—Yes.

Have you considered for some years this subject of tenant-right?—Yes; I have been a valuer between out-going and in-coming tenants the last 20 years, and have had a great deal of practice in it. The question has been discussed in the Loughborough Farmers' Club.

Have some of the members of that club considered the necessity for an allowance being made in the nature of compensation to the tenant?—Yes, that has been considered at the club.

In the district with which you are acquainted there is not much custom of compensation?—No; I will read, with permission, two or three memoranda I have of farms that I have been over, upon the subject of tenant-right, showing a variety of customs in a few words; these relate to particular farms that I have valued. The customs vary so much, that it is impossible to give one general principle.

Mr. HAYTER.] Do each of those farms then refer to the districts round them in which there is a custom?—Yes.

It is not a rule in respect to those particular farms, but it is the custom of that particular district?—It is the custom in the villages where those farms are. The customs vary very much even in the same villages; we have many different customs with us.

In fact there is no custom?—No custom.

Mr. HENLEY.] It is the practice of each estate rather than the custom of the country?—Yes.

CHAIRMAN.] Will you proceed with your statement?—This is a valuation made at Bunney, in the county of Nottingham. Wheat sown upon fallows, the whole of the crop claimed by the outgoing tenant from the right in the open fields.

At what time does the tenancy begin?—It is a Lady-day holding, without any deduction for the in-coming tenant. If the crop is not valued they get it at harvest.

Mr. Hayter.] The crop is valued to the in-coming tenant?—Yes.

That is the open-field system?—That is the open-field custom.

Mr. Moody.] Is it compulsory for the out-going tenant to sell his out-going crop?—Yes, it is taken by valuation, and if not taken he would get his crop. Wheat sown upon clover, the ploughing, seed, and labour, and the herbage from Michaelmas to Lady-day, allowed; that is the custom. All the wheat sown upon pea or bean stubbles, the ploughing and seed paid for, the seed bill and sowing. The manure in that parish belongs to the tenant; that is always valued.

Chairman.] Is any increased value put upon that if the tenant has purchased oil-cake?—Yes, always. Lime is paid for when no white or corn crops have been taken; that is the custom there. Then there is an allowance for drainage for five or six years upon the labour or tiles that have been used by the tenant, when he finds both. The general custom is in that district for the landlord to find the tiles and the tenant the labour.

Mr. Henley.] Does the tenant get an allowance for labour then?—Yes.

Mr. Hayter.] What is your object for the legislature to accomplish in respect of such rights as those you have referred to?—We think the allowance for manure and lime is very far short of the benefit which the out-going tenant ought to receive.

The custom is wrong then?—Yes.

Then you would not have that custom established?—No; we should be glad if we could be placed upon the same custom as Lincolnshire.

What do you apprehend that the legislature should do?—That they should give the tenant a power of claiming compensation so far as he has a right to receive it.

Do you propose that the legislature should establish by law the customs that now prevail in that district of the county, or do you mean that they should give different rights to different districts?—What I mean is this: I do not think the legislature can do more than this, give one general clause allowing agreements between landlord and tenant to be made according to the different class of soils occupied in different parts of the country.

Sir C. Lemon.] What prevents their making such agreements now?—Because the landlords or agents do not see the importance of encouraging improvements.

Chairman.] Are you aware that according to legal opinion owners of settled estates have no power to make agreements for compensation, except by the custom of the neighbourhood?—I was not aware of that.

If that be the case, that of course would strengthen your wish for legislative interference?—Yes.

Are there any other acts of husbandry you wish to speak to?—This is the custom in Notts: wheat upon fallow, seed, and labour, and the rates and taxes for one year are paid for, and in many cases two-thirds of the fallow-crop are allowed to the outgoing tenant.

Mr. Hayter.] What is the entry?—At Lady-day.

You say they are paid rates and taxes?—Yes, that is what we term seed and labour valuation. That takes in a year's rates and taxes, making the fallows, the seed, and the sowing.

That is a different mode from the one you spoke of before?—Yes, that is a different mode from the last.

What would you wish the law to establish?—I cannot say.

Chairman.] Do you wish the law to interfere with the custom and acts of husbandry, or do you desire that the tenants should have power to claim compensation for acts of improvement?—Yes.

Do you seek for any interference at all on the part of the legislature with the acts of husbandry?—I am not capable of giving an opinion as to how the legislature could interfere in that way; what I want is a greater compensation, to encourage the investment of capital in the cultivation of the land.

Sir J. Trollope.] Do you mean that you wish the legislature to give the power of recovering compensation?—Yes.

Not to point out what the compensation ought to be, or the mode of husbandry?—No, certainly not.

Chairman.] Generally speaking, in the district with which you are acquainted, is there compensation to the outgoing tenant for improvements by bones?—Not generally; I have never seen any at all in my neighbourhood.

Sir J. Trollope.] Do they use bones in your neighbourhood?—No, the land does not require so many bones; it is a rich quality of land.

Chairman.] Is there compensation awarded for any artificial manure used?—Not generally.

Is there compensation generally for the use of cake in your neighbourhood?—No, it is not generally established; in some instances it is done. I have never seen it included in any agreement.

Do you say that in some instances there is compensation for such things as that given?—No.

Do you think it desirable that it should be given?—Yes.

Do you think it would produce great improvement in the land?—Yes.

Is there much land in your neighbourhood requiring improvement?—Yes; there is a great deal that would be improved by it.

You do not find that the landlords have come forward to drain the land themselves?—No.

And the tenants, under their present tenures, have not been encouraged to do so either?—No; I think it is very important that the landlords, as far as they can, should drain the land themselves, because when it is left to the tenant, it is very imperfectly done in many instances. There are very few of the tenants capable of having the work done so well as it would be done by the landlords; the landlords understand it better, and it is more desirable to have it done in that way, than by giving tiles to the tenants and leaving them to put the tiles in.

In point of fact, landlords have allowed, in those extensive districts with which you are acquainted, a great portion of land to remain undrained?—In some parts there has been a great deal done by the landlords finding the tiles, and the tenants doing the labour.

If the tenants had compensation for drainage, to be exercised under powers of supervision by the agent, in order that he might be satisfied of its proper execution, are you of opinion that a great deal more land would be drained than is now drained?—Yes; I have no doubt of it.

Sir C. Lemon.] You say that you generally give agreements; what do you mean by that? is it an agreement for holding from year to year?—Yes; we have no leases in our neighbourhood at all.

In those agreements are there any covenants defining what those compensations are to be?—I have seen none, except the covenant which I have read to the committee; that comprises the principal part of the agreements in my neighbourhood.

Is there mostly, in those agreements, a sort of a general declaration that the tenant shall receive compensation according to the custom of the country?—No, not generally.

Then what do those agreements express?—The manner in which the land should be managed, and that the tenant shall receive such and such allowances when he quits.

Those allowances are defined?—Yes.

They are specially mentioned?—Yes.

That is the reason why in each of those separate cases different claims have been made?—Yes.

The particular allowance being expressed in the agreement?—Yes.

Mr. HAYTER.] Supposing there be no agreement, how then does the valuation take place between the incoming and the outgoing tenant?—According to the principle pursued in the parish.

In what state of cultivation is that part of the country?—A great deal of it might be very much improved by good management.

Mr. NEWDEGATE.] You have spoken of Bunney in Nottinghamshire; that is a very hilly district, is not it?—No, it is not.

On which side of the hill is the forest?—On the Loughborough side.

Then the difficulty which is experienced at present is principally owing to the agreements not being sufficiently specific, and not including the compensation for the imprrovements that are required?—Yes; I think with a more liberal allowance greater improvements would take place in farming.

What the tenant wants is security for out-going money?—Yes, for capital expended.

And the want of that is felt owing to the agreements not being sufficiently enlarged and specific?—Yes.

If the agreements were more enlarged and specific so as to include compensation for draining, and the other improvements which are required for the land, would not those improvements take place under those agreements?—No doubt they would where they were granted; but where the landlords or their agents will not grant them, then they could not.

What is the reason that they find tenants for the farms, if they do not give sufficient security?—We know that the great competition for farms produces tenants; whether they are of the best class or otherwise is another question.

How do you account for that great competition?—By the abundance of capital, and want of situations in this country.

Do you think that a man would invest his capital under an agreement which would give him no security, merely because he had capital?—Yes, he would invest it if he thought he could get a living upon the farm, and merely save himself; he would run the risk of taking that farm to occupy it.

That is purely his own act?—Yes, that is his own act.

Your desire for an alteration of the law originates in your anxiety to see agriculture improved?—That is the only object I have in view. I should be very sorry to have it for one moment supposed that there is any other wish amongst the tenantry, or that there is any other feeling; they have all the greatest respect for the landlords.

Then the fact is this, that it is not owing to any injustice done to the tenant that you desire to see the law altered, because the tenant has the power of guarding himself from injustice in the clauses of his agreement, but solely with a view to the improvement of agriculture?—I do not say that exactly. I consider that in many valuations I have made, the present customs do injure the tenant; and therefore I should say that it is in justice to the tenant that an alteration should be made in some of those customs.

The customs, you stated, are very various, and in some instances they do not comprehend allowance for improvements which you think requisite?—No.

And in other cases the customs are excessive, and injurious to the in-coming tenant?—I do not think any of the customs produce injury to the in-coming tenant, except taking the whole crop of wheat; all the others, I think, are in favour of the in-coming tenant, and not the out-going tenant; I have known an out-going tenant who has managed his farm well, and has left behind him more than he ought to have done.

Are the committee to understand, that in respect of the crops which are left under the customs in the cases you have specified, there is too large an allowance to the out-going tenant from the in-coming tenant?—Only in that one instance.

Is there a great desire for legislative enactment in those districts of which you speak?—I think it is very general.

For the purpose of encouraging farming, you desire a more easy mode of recovery of the compensation for improvements?—Yes.

But does the desire extend to the alteration of the customs?—So far as they are not sufficient to compensate the tenant for what he has done.

That is in certain cases?—Yes.

Mr. HAYTER.] Has it occurred to you that there is any portion of the improvements that ought to be paid to the tenant as a general or universal rule?—In our discussions at Loughborough we came to resolutions upon that subject, taking the opinions of the most eminent men in the neighbourhood.

What is your opinion as to the proportion of capital expended by the tenant that should be secured to him by law?—I can only answer that by giving you particular instances as to lime.

Have you got a copy of those resolutions of the club?—Yes, I have. (*The witness produced the same.*)

These resolutions were agreed to by those members of the Loughborough club?—They are suggestions for improved agreements, by the Loughborough Agricultural Society.

And do those resolutions embody your views on the subject?—I should not say the whole; I think drainage is put down at too long a time.

But what is the proportion of improvements which you still think that the tenant ought to receive the benefits of, in respect of unexhausted capital? I cannot give an opinion upon that without going into a calculation upon the different items.

CHAIRMAN.] Do you think that if an act were passed allowing an arbitration to take place, that it would be sufficient for the purpose of securing to the tenant the whole return of his unexhausted improvements? That would be much the fairest and most equitable way.

Mr. BOUVERIE.] Have any improved agreements been entered into within your knowledge, embodying any of those suggestions which you have now produced? Some of them have been agreed to, but not the whole.

Where they actual agreements between landlord and tenant? No.

Do you hold your farm under agreement, or from year to year? I have no particular agreement.

Have you ever had a written agreement with reference to your taking? I had some years ago, but I have not any now.

Has your holding gone on ever since? Yes.

Is there any difference in that agreement to the custom of the country? No, it specifies what I shall be allowed.

How do you ascertain those various customs which you say exist in every district where you go to value? By the people who have occupied the farms, we arrive at it by them.

For the particular farm which you are valuing? Yes; as a man enters with us, so he quits; that is the usual principle.

Mr. HENLEY.] You have told the Committee that your experience extends over Derbyshire, South Nottingham, and Leicestershire? Yes.

Are the holdings generally in that district large or small? Generally speaking, small.

What size are they? They do not average more than 200 to 300 acres.

Are you employed as an agent of estates as well as valuer? In a small way, for two or three.

You have not any extensive knowledge as an agent in regard to letting estates? No. I let some land, but not to a great extent.

Do you know, of your own knowledge, whether there has been any general requirement on the part of the tenants to have clauses introduced into their agreement which have been refused by the landlords? I am not aware that there has been.

What are the items that you think a tenant ought to be entitled to receive payment for on quitting his farm? I think there ought to be a larger allowance for lime and manure, and drainage.

What do you mean by the word manure; do you mean manure of all kinds? I mean manure made from the use of oil-cake, and bought manure, that is, stable dung, or night soil; an allowance for rape-cake, or lighter manures, I do not think ought to be taken in; guano, I do not think, lasts more than one crop, myself.

You mean the manure brought on the farm, not manure made on the farm? Without it belongs to the tenant.

In those cases where it now belongs to the tenant, do you think it might be altered? If it could be, it would be desirable. I think if all manure belonged to the tenants it would be better, because if they were going to quit the farms they would take care and make a good quantity of manure for the in-coming tenants, so that nothing would be wasted.

Do you think a tenant having come into a farm, paying nothing for the manure, the manure having belonged to the estate, ought now to be made by Act of Parliament possessor of that manure? Not without paying.

But who is he to pay? The landlord.

You state that in some parts of the district with which you are acquainted the custom is that the manure made upon the farm belongs to the tenant? Yes.

And in others it does not? And in others it does not.

According to your view, there should be some legislative enactment to make it equal? I do not say that.

What is your opinion? ought it to be so or not? That must be as the landlord and tenant agree; it would be better if all the manure belonged to the tenant, because a tenant who was going to quit a farm would take care of it, instead of wasting it, and leaving little for the in-coming tenant in many instances.

What is the practice with regard to buildings in the district you speak of? Generally the landlord finds the materials, and the tenant does the workmanship.

That is the general practice? Yes, that is the general practice.

Are thrashing machines generally used throughout the districts you speak of? Yes, they are generally used, but there are no steam engines at all.

Are the thrashing machines portable or fixed? Most of them are portable; there are a few fixed, but not many.

And where there are fixed thrashing machines are they considered to belong to the tenant, or are tenants allowed to remove them at the termination of the tenancy? Where the machine belongs to the tenant he would remove it; that is the practice in our neighbourhood.

The buildings belong to the landlord? Yes, no allowance is made for buildings on quitting.

Whether the tenant has put them up or not? It is to be understood I said the landlord found the materials and the tenant the workmanship, and therefore no allowance is made under those circumstances.

Supposing the tenant found the materials as well as the workmanship, would there be any allowance in the part of the country you are acquainted with for those buildings? Not that I know of.

What period of time should be allowed for lime? Five years.

Without reference to the number of crops taken? Ours are all yearly occupations, and therefore if the landlord or his agent allows his land to be improperly kept, it is his own fault.

What is the course of husbandry in the district? On the light land the four-course is the usual system; upon the strong land, the five, and in some cases six course system.

How long do the seeds lie? One year in the light land, and upon strong land two generally.

Do you say that the period you assign for lime should apply to other land equally with yours? I should say that upon the strong land it would last longer than the light; the principle of liming adopted by me is this: I put on five to six tons an acre, and I never find it necessary to lime under ten years myself. The effect continues much longer than five years.

You think the in-coming tenant should pay for five years? Yes.

And do you apply that principle to the heavy land as well as the light? The heavy land is influenced by it longer than the light.

If it lasts longer, do you apply the same principle? Yes, that would be fair between both parties.

Five years? Yes.

What period should you give for drainage? I should give six years for draining, upon shallow draining from two feet to three feet.

The depth of the drainage would alter the expense? Yes.

Therefore you give six years' drainage? Yes.

How would you deal with oil-cake? I should give for the oil-cake one half the last year's bill; that is what has been recommended, I think.

Do you agree with that recommendation? Yes.

How would you treat the custom you have stated to exist as to the in-coming tenant having the right to enter upon the land? The in-coming tenant has no right to enter, in our district, until Lady-day, without a special clause in the yearly agreement.

The out-going tenant takes the crop? No, the out-going tenant does not take the crop, but the in-coming tenant could not enter upon the farm till the 25th of March.

You have stated that you should value the crop of wheat to the in-coming tenant if he agrees to take it?—Yes.

And that if he does not agree, the out-going tenant takes it as the away-growing crop? Yes, as in the instance I have alluded to.

How would you deal with those cases by law? That I cannot give an opinion upon, as to how you are to deal with them.

You say the Loughborough Society has considered the question of tenant-right very much? Yes.

Have you considered this portion of it, as existing in the part of the country which you say you are conversant with? That must be a private agreement between the landlord and the outgoing tenant.

It must be left as it stands? The crop must be bought up by the owner of the land; it cannot be done in any other way.

Would that be done by law, or be allowed to remain

as it is? I do not pretend to give an opinion as to what should be done upon that particular point at all.

Is there anything, in your judgment, to prevent parties securing to themselves, by private agreement, the advantages of the five years for lime? It might be done by private agreement if they would do it.

But there is no reason why they should not do it, in your judgment? No.

Do you, of your own knowledge, know that any landlords have refused to enter into such agreements at the general wish of their tenants? Yes, I know they have been refused agreements of that kind.

Do you think that that is general? I know that they are not given generally: I am quite sure that if the landlords knew their own interests, they would offer such agreements to their tenants.

Do you know the fact, one way or the other, whether there has been a general request on the part of tenants to have such agreements, and whether they have or have not been generally refused? I do not think there has been a general application for them.

Mr. Bouverie.] Have there been no such agreements entered into? Not in my immediate district.

The Earl of Arundel and Surrey.] Did you hear the evidence given by Mr. Beasley as to leases? Yes.

Does the general feeling in the part of the country you are acquainted with correspond with that? The feeling in my part of the country is unfavourable to leases.

Mr. Bouverie.] Why is the feeling unfavourable to leases? Because the occupations are too small; it would not benefit the occupier to grant him a lease; it is better to let him live under the compensation of tenant-right than to give him a lease; the tenant would manage the land much better, and the owner of property would have more influence over him; in that way the land would be kept in better condition than by granting a lease for so many years. The land does not require so much capital where the occupation is small.

The Earl of Arundel and Surrey.] Has there been any change of feeling in that respect within your recollection? No, I do not think there has.

Sir C. Lemon.] Then of the two, you think they would prefer the tenant-right to the lease? No doubt of it at all.

What difficulty would there be in a man having the advantage of both, that is, a lease containing covenants giving him all the advantages of the tenant-right at the end of his term? Only this advantage, that in small occupations the landlord would run all risk, the tenant would run no risk at all, because in small occupations the tenants have not the capital that they have in larger occupations. Leases are only required where there must be a great outlay to bring bad land into a good state of cultivation.

Mr. Newdegate.] You have stated that there is no great desire for leases? No, there is not.

Is not that attributable to the fact of the landlord making allowances when the the tenant is distressed by any circumstance? No, it is not at all.

You have been asked whether the recovery of the compensation under the custom would not apply as advantageously under a lease as under a yearly holding? Yes.

Would not the fact be this, that the recovery under the lease, according to the custom, would only happen once, perhaps, in 21 years or 14 years under a lease, whereas the recovery would happen under a yearly tenure, whenever that tenure terminated? Yes, you would recover just the same under a lease. I do not think there is that desire for leases that there was some few years ago.

You would not recover so frequently under a lease, or have the power of recovering so frequently under a lease as you have under a yearly tenure? Certainly not.

Do you think that it is more advantageous for the tenant and for the advantage of agriculture, that there should be in the agreements by yearly tenure clauses giving the tenant compensation for improvements, rather than that the compensation should be included in the terms of the lease? I think it would be better.

Have you any knowledge of leases? We have none in our neighbourhood that I know of.

And they are not desired? They are not desired at all.

Mr. Henley.] In the district with which you are acquainted are the tenantry short of capital? Some of the small occupiers are short of capital.

In your judgment, does it require more or less capital to occupy one farm of 500 acres than two farms of 250 acres; that is, supposing 500 acres to be occupied by one tenant, would it require more or less capital to cultivate that 500 acres in one farm, than if it were divided into two? It would require less in proportion in one than in two.

Yet you say the smaller farmers are short of capital? I say generally it is the case. I do not say they are all short of capital, but they have less of capital than the occupiers of large farms.

In your neighhourhood, generally speaking, when the parties come to take farms, have they, in your judgment, generally sufficient capital, or are they bare of capital? In many instances they are short of capital.

Would an extensive tenant-right, such as you have described, require a greater capital? Yes, it would.

The coming-in to the farm would be heavier? Yes.

Then the heavy tenant-right would have a tendency to shut out men of small means? It would require more capital to take the land.

And necessarily that would shut out men who have not that large capital? It might have that effect in part.

Chairman.] Supposing the effect contemplated by the last question to take place, that the incoming tenant would not be able to take so large a farm, would not it answer better for farmers to take farms more within the power of their capital, and to farm a smaller quantity of land higher? No doubt it would.

Do you not also think, that though the present occupiers of small farms are short of capital, if they had the security given to them which is contemplated, it would afford them means of raising money in some manner to invest more money in their farms? Yes, it would.

You think that parties might be disposed to advance capital on this claim of tenant-right? They would do much better with the tenant-right.

Is it your opinion that not only the tenants do not desire leases, but that it would be imprudent on the part of landlords to grant leases to tenants with deficient capital? That is my opinion.

It would not tend to increase the produce of the land? Certainly not.

How much do you think, if there were a good system of compensation by tenant-right, the produce of the land would be increased in your neighbourhood? From the experience of my own farm I should say (and I have used a good deal of cake and other manure), I think on that farm I have a fourth more than when I began to farm it.

Might that be taken as a fair example of the increase of produce? Yes, of all land that is in a high state of cultivation.

Mr. Bouverie.] Looking at it in a business point of view, has it paid you as a farmer? I have no doubt of it.

Chairman.] Then do you think that you would be entiled to receive such compensation as you have pointed out in the event of the farm being taken from you? I could not claim it.

In justice, do you think you would be entitled to such

compensation, in the event of the farm being taken from you? Yes.

Mr. Moody.] If you had not had that capital which you have, would it have paid you to have borrowed money and expended it on the farm? I do not think it would, except under a taking of a great number of years.

You would not encourage the expenditure of capital in that way; that is, raising money for that purpose? I can only say this, that it has answered my purpose very well.

(To be continued.)

THE CLARET VINE, AND ITS WINE.

BY J. TOWERS, MEMBER R.A.S., H.S. OF LONDON.

The vine, though pretty well known, is by no means extensively cultivated in Britain: it is otherwise described in the catalogues as "the Clairette rose, or blood grape, ripening its fruit in October. The berries black; juice red; austere in flavour; leaves red about the time the fruit ripens." The plant is rather slender and delicate in its habit, but is hardy, and generally ripens its fruit perfectly, if trained to a wall that has a south or south-east aspect. In common with all other hardy grapes, the fruit and foliage would be much protected, and improved in size and flavour, by a glass veranda, or simple glazed two feet wide awning, supported upon light iron pillars, and made to slope at a moderate angle from a ten feet wall, so as merely to shelter the vines from above. Such a defence was adopted by the late Mr. Loudon, at Bayswater, and the effect was altogether beautiful. But the claret vine will never be grown as a table fruit, although when dead ripe it possesses a simple and pleasant acidity; nor is it desirable it should be so, since it may be devoted to a far more impor tant purpose in the domestic economy.

To Mr. M'Culloch the public has been mainly indebted for the announcement that wines of excellent quality, not far inferior to those of the Rhine, can, in process of time, be produced, not only from green immature grapes, but likewise from the leaves and tendrils of the vine; and not only so, but that the wine from grapes ripened in our climate is greatly inferior to the wine made from the *un*ripe clusters, in consequence of their deficiency in that peculiar salt (the *bi-tartrate of potassa*, i. e. cream of tartar) which, in the wine countries, is deposited in the form of crude tartar or argol.

The fruit of the claret vine, however, furnishes an exception to this rule, insomuch that a wine of choice quality, of fine flavour, and of a richly deep colour, can be made in a few months from the *ripe* fruit and the red leaves of the tree, by a simple process shortly to be described.

The wines of Bordeaux, namely, the Laffite, Chateau Margot, &c., &c., are not known as *claret* in France: they are generally classed as "*Vins de Bordeaux.*" Our *real* claret—the wine now under consideration being, in fact, prepared from the claret vine—is no impostor, and though it may not possess the *bouquet* and distinctive *gout* of the famous French wines by *us* called clarets, is a genuine and excellent *vin de table*, that every one has been pleased with, and which has been preferred to the clarets commonly sold in England.

Process.—Let the quantity of wine to be made be taken at six gallons when finished and ripening in the barrel. Collect, in the first place, 6lbs. of the red-tinted leaves, tear them to pieces; avoiding any steel instrument, as the astringent principle would produce a blackness. Put the torn leaves into a clean tub or deep pan, pour over them six gallons of scalding water (not irony), beat and press the whole till the water soak the leaves, and then cover the vessel with a flannel. In 24 hours the infusion will have acquired the colour of the richest Tuscan rose; it will be somewhat astringent, with a distinct flavour of the vine. Having the meanwhile collected the ripe fruit and removed every mouldy berry, weigh out 24lbs. (4lbs. per finished *gallon* being a fair proportion, though 5lbs. would be preferable): bruise the clusters with the stalks, effectually, but with not so much force as to crush the seeds. Do this in detail and transfer each parcel of pulp and juice to a cylindrical, deep stone vessel, or to a clean eight gallon cask divested of its head. This done, strain the leaf liquor through a hair sieve or bag, and strongly press the mass; the quantity obtained ought to be 4 gallons; pour it upon the bruised fruit, stir well with a broad oar-like stirrer, cover the vessel with a flannel, and lay over that a board, or the head of the cask. The external temperature should be noted, also that of the apartment, in which it should not exceed 60 degs. of Fahrenheit. If it do, and the wine-cellar perfectly sweet, and of brick, arched, it will be prudent to make use of it from the first. In a day or two a little creaming upon the surface of the liquor will prove the commencement of a slight fermentation; and so soon as this is discovered, the density of the juice should be ascertained, either by a good saccharometer (which can be had for a few shillings), or by a decimal process of calculation; pure, filtrated rain water being taken, at 60 degs. of Faht., as the standard or unit. The juice is now to be strained, either by steady pressure, through a sound hair sieve, or, what is better, by means of a domestic wine press, furnished with hair bags. Add good *loaf* sugar gradually, stirring at each addition, till the specific gravity, compared with that of the water at 1,000, reach 1,100 or rather 1,115. Experience has proved that the leaf and fruit liquor, without any sugar, generally shows a gravity of about 1,025: that 1lb. of loaf sugar gives an increase of 36 decimals to each gallon of fluid, and therefore that about 15lbs. will be required to raise six gallons of liquor already marking 1,025 to the gravity of 1,115. Be this however rather more or less (for slight differences will occur), whenever the desired density is attained, the "sweet *must*" so produced is to be stirred twice a day, till upon trial the gravity shall be reduced to 1,075 (the tub or stone vessel being covered after every stirring with a clean flannel); when, a sweet and dry barrel being ready in the cellar, two ounces of powdered red argol are to be put into it, and the must turned upon that immediately.

The subsequent treatment in the cellar is of great consequence. Presuming that the average temperature of the place does not vary above 10 degrees, and that between October and January, it rarely falls below 52 degrees, the wine will, at first, ferment pretty strongly; but its action will gradually diminish till it terminates in a gentle fretting, that will not cease till one of three conditions be attained: first, all the sweet principle being subdued, some danger will arise, from pre-

dominance of the natural leaven or ferment, of its passing to the acetous fermentation at the expense of the vinous alcohol; or second, that the wine will remain sweet, from an insufficiency of leaven; or third, that from a complete balance of powers the wine will progressively become dry, brilliant rich in colour and bouquet, little susceptible of any sudden alteration of quality: such, a wine—that genuine unsophisticated CLARET we aim at, and now possess—should become in six months after its vintage in October. Not one drop of any spirit whatever must be added at *any stage* of the processes. The first cask must contain rather more than the quantity of sweet "must;" because, as the wine is intended to be dry, none of the frothy ferment is permitted to flow over. The bung-hole should be merely covered with a vine leaf, and over that a clean piece of slate, so long as brisk hissing should be audible; but when that subsides, and a gentle fretting takes place, the bung may be inserted, and the orifice of the vent peg only left open for a week or two.

One *racking* will suffice for a wine so light as this claret, and that is most safely made about Christmas or later, during tranquil, frosty weather, with the wind at north-east.

If the wine have not become dry about the vernal equinox, it should remain in the wood (after a later racking) the year round; but in general the vinous process is perfected by the 21st of March next after the vintage.

Green grape wine to represent Moselle, may be prepared in August, by a similar process (bringing the gravity however to 1,120) and by a careful regulation of the temperature.

Croydon, Sept. 11.

EXEMPLIFICATIONS OF INSTINCT.—The similarity between the simple instinctive actions of animals and their ordinary organic functions is so great as to lead us to suppose that both sets of operations are arranged upon similar plans, though these may not be identical, and that both are carried on without the forethought or the consciousness of the animal. Thus the young bee on the day that it first leaves the cell, without teaching and without experience, begins to collect honey and form wax, and build up its hexagonal cell, according to the form which its progenitors have used from the earliest generations. Birds build nests of a certain structure after their kinds, and many species, at certain seasons excited by some internal impulse, take their migatory flight to other countries. The insect, which never experienced a parent's care or a mother's example, labours assiduously and effectively for the future development and sustenance of an offspring which it, in its turn, is doomed never to behold. Others toil all summer and lay up stores for winter, without ever having experienced the severity of such a season, or being in any sensible way aware of its approach. We know that such actions are the result of involuntary and unreflective impulses, because we often find them performed in vain. Sir Joseph Banks had a tame beaver which was allowed to range at liberty in a ditch about his grounds, and was at all seasons liberally supplied with food. One day, about the end of autumn, it was discovered in the ditch very busily engaged in attempting to construct a dam after the manner of its companions in a state of nature. This was evidently the blind impulse of its instinctive feelings, for a moment's exercise of the lowest degree of reflection must have shown it that such labour, under the circumstances in which it was placed, was altogether superfluous. A common quail was kept in a cage, and became quite tame and reconciled to its food. At the period of its natural migration it became exceedingly restless and sleepless; it beat its head against the cage in many vain efforts to escape, and on examination its skin was found several degrees above its usual temperature. A bee, which can fly homewards, one or two miles, in a straight line to its hive, with extreme accuracy, if it happens to enter an open window in a room, will exhaust all its efforts in attempting to get out at the opposite window which is closed down, but never pauses to think of retracing its flight a little way backwards, so as to fly out at the opening at which it had entered. We often observe a dog, when going to sleep on the floor, turn himself several times round before he lies down, and this is just one of the lingering instincts which he has retained; while in his wild state he is accustomed thus to prepare his bed amid the tall grass or rushes. An acute observer of animal habits has remarked that a jackdaw, which, for want of its usual place of abode, had for its nest made choice of a rabbit hole, was often sorely perplexed in what way to get the long sticks, of which its nest was to be formed, drawn within the narrow entrance. Again and again did it attempt to pull in the piece of stick, while it held it in the middle in its bill, and it was only after a series of vain efforts that, by mere chance, it at last accomplished its object by happening to seize it near one end instead of the centre. In this case it appeared to the observer that the building instincts of this bird were complete and perfect within a certain range, but without the limits of this circle it had no deliberative foresight to guide its actions. —British Quarterly.

SHEEP POX.

SIR,—Many of those whose opinions I respect, for their sincerity, have long contemplated with alarm every measure of free-trade, particularly in agricultural produce; and hence, any opportunity of retrograding is hailed as a favourable turn. As a consequence, the late orders of the British Government, which are calculated to check the future importations of sheep, are held to be "very judicious." But however highly I appreciate the general measures of that administration—whose energy and consistency are at this moment commanding the respect, and sustaining the hopes of every friend of order and constitutional government throughout Continental Europe—it is unhappily beyond their power effectually to lessen the calamity which has fallen upon the English flockowner. The *variola ovina* must spread itself inevitably over the country, because *hares* are quite as liable to it as sheep; and, therefore, wherever their ulcerated lips have come in contact with the grass, sheep depastured on the same herbage will infallibly catch the infection. The safeguard of inoculation, which I recommended from the first, is the same which Professor Simonds, after careful consideration, has confirmed by his high authority; and I call upon the British farmer once more to take a favourable moment, before the weather becomes colder, to inoculate (*not vaccinate, as it cannot be relied on*) with matter taken from an animal affected in a *mild* form. In subsequent seasons it will only be necessary to inoculate the lambs, who will not take it again. That the disease may arise spontaneously I am fully convinced. Eight years have elapsed since I heard of its appearance in these parts, and I believed it wholly removed; but within these few days I have been told of its existence in Mecklenburg, where, on two

farms, the effects of inoculation were very strikingly illustrated. In the one case it was immediately resorted to, and with such happy result that no sheep died (and only a few lambs) out of a large flock of between 5,000 and 6,000. In the other, inoculation was delayed, from the circumstance that the disease not appearing at first in the usual way, but very similarly to what occurred in Mr. Leyland Wood's flock at Chilgrove, it was not supposed to be small-pox. A very considerable number died (156 out of 500); and on examination a fetid matter was found diffused between the skin and the flesh, which *one* veterinary surgeon pronounced to be undeveloped small-pox virus. That his opinion was well grounded, was soon proved by the regular *variola ovina* breaking out in some of the remainder of the flock, on which inoculation was resorted to, and the disease stopped. This latter case occurred within five miles of this house; but as a large river intervenes, I have no fear of infection from that quarter, as hares are not likely to find their way from thence to my lands; still, I shall think it a matter of common sense precaution to have my lambs, and the younger portion of my flock, inoculated so soon as the weather, which has been for six weeks uninterruptedly very bad, shall have taken a more favourable turn.

I remain, Sir, your obedient servant,

Tuschenbeck, Sept. 5. J. STANLEY CARR.

SALE OF DAVID BARCLAY'S, ESQ., AT EASTWICK PARK, SURREY.

The issue of this sale fully bears out an opinion previously expressed by us—"that those who give fitting attention to the rearing of their stock will not be without their reward." In this sale the prices realized for Southdown Sheep were enormous; no less a sum than £63 15s. being given for five three-year-old ewes, and some of the year old and two year old ewes fetched, in lots of 5 and 10, the sum of £7 15s. each animal. Mr. Barclay spared no expense in the rearing of his sheep. He bred from the flocks of Mr. Jonas Webb, of Babraham; John Ellman, Esq., of Glynde, near Lewes; his Grace the Duke of Richmond, and other highly eminent breeders; and the reward of his talent and skill in producing a flock of sheep, such as are rarely to be found, has been the realization of the enormous sum of £2,811 10s. for about 600 sheep. Of the two-year-old tups, one was bought by Mr. Strafford, for Robert Field, Esq., of Pyrgo Park, near Romford, for 32 guineas, and which was considered to be a splendid animal. He purchased several ewes and lambs for the same gentleman, and also for E. F. Slade, Esq., of Kennell House, near Chiselhurst. Mr. Pinnix purchased a very fine two-year-old tup for 50 guineas.

This sale was conducted by Messrs. Verrall and Son, of Lewes, with their accustomed tact; and was attended by the principal breeders of Southdowns, as well as several other noblemen and gentlemen. The different lots were purchased by the Marquis of Camden, Earl Ducie, Earl of Chichester, Gen. Wemyss (for H.R.H. Prince Albert); J. V. Shelley, Esq.; Jonas Webb, Esq.; James Turner, Esq., of Brighton; Mr. Strafford, of London; Messrs. Hankey, Hanbury, M.P., Newman, Burgess, Gosling, Penrose, Galton, &c., &c.

The following is the result of the sale:—

The ONE-YEAR-OLD EWES were purchased by Col. Kingscote, at £7 15s.; ditto, £6; J. V. Shelley, Esq., £5 10s.; Colonel Kingscote, £4; Jonas Webb, £4 8s.; Colonel Kingscote, £4 15s.; ditto, £4 14s.; General Wemyss (for Prince Albert), £4; J. V. Shelley, Esq., £3 5s. 6d.; ditto, 55s.; Gosling, 68s.; ditto, 63s.; Burgess, 55s.; General Wemyss, 50s.; ditto, 42s.; ditto, 63s.

The TWO-YEAR-OLD EWES: Colonel Kingscote, £7; ditto, £4 8s.; J. V. Shelley, Esq., £3 15s.; Jonas Webb, £4; Penrose, £6 5s.; ditto, £7 15s.; Johnstone, 55s.; Kingscote, 63s.; Gosling, 63s.; Hankey, 48s.; J. V. Shelley, Esq, £12 15s; Kingscote, £6 10s.; ditto, 70s.; Earl Chichester, £6; Kingscote, £7; General Wemyss, 66s.; Kingscote, £6; Webb, 68s.; Strafford, 52s.; ditto, 52s.; Shelley, £10 10s.; Webb, £9 10s.; Shelley, £6; Kingscote, £9 5s.; Webb, £7; Shelley, £4 10s.; Pinnix, £5; Webb, 55s.; Shelley, 75s.; Webb, 50s.; Strafford, £3 3s.

The EWE LAMBS: Shelley, 60s.; Pinnix, 72s.; Kingscote, 56s.; Strafford, 35s.; General Wemyss, 40s.; Pinnix, 52s.; ditto, 48s.; Galton, 50s.; Camden, 35s.; ditto, 42s.; Strafford, 38s.; Camden, 36s.; Burgess, 36s.; Bonsor, 32s.; Burgess, 31s.

RAMS: Strafford, £33 12s.; Pinnix, £52 10s.; Hanbury, £31 10s.; Beard, £38 17s.; Smith, £32 11s.; Burgess, £10 10s.; Gatten, £13 13s.; Bonsor, £18 18s.; Pinnix, £9 9s.; ditto, £9 19s. 6d.; Friswell, £8 8s.; Allfree, £5 15s. 6d.; Strafford, £13 13s.; Friswell, £6 16s. 6d.; Royston, £3 13s. 6d.; Elphick, £5 15s. 6d.; Hook, £4 14s. 6d.; Swaine, £4 4s.; Brampton, £26 5s.; Drewitt, £15 15s.; Allfree, £11 0s. 6d.; Hankey, £5 15s. 6d; Baker, £2 12s. 6d.; W. Roper, £5 15s. 6d.; Allfree, £5 5s.; Baker, £3 13s. 6d.

RAM LAMBS: Earl of Chichester, £15 15s.; Botting, £14 14s.; Elphick, £10 10s.; Gen. Wemyss, £17; Balchin, £16; Gen. Wemyss, £16. The others realized lesser prices.

SALE OF THE GORE-FARM FLOCK.

On Tuesday, Aug. 29, this celebrated flock was disposed of, under the hammer of Mr. J. Harding; and, perhaps, such a lot of sheep, so highly bred, so well matching, and of such beauty and symmetry, was never before offered to public competition in this county. The fame of the proprietor, the late Mr. James Beaven, as a good judge and successful breeder, was not confined to his own district, he having been a successful competitor at the great meetings of the Royal Agricultural Society; and having sought the best blood wherever to be found, and at whatever expense, to perfect his own flock, a very large number of eminent breeders and flockmasters assembled to avail themselves of the opportunity of selecting from his stock superior animals to improve their own. Among the company were those eminent breeders Mr. John and Mr. Thomas Ellman, of Glynde, and Mr. Jonas Webb, of Babraham; the Earl Ducie; Colonel Kingscote; O. Codrington, Esq., of Kilminston, Hants; Walter Long, Esq., of Holt, Hants; Mr. Farquharson; Mr. Raymond Barker; Sir E. Baker; Mr. Biggs, of Stockton; the Hon. Admiral Bouverie; Mr. Wyndham, of Dinton; Captain Wyndham; Mr. Wm. Brown; Mr. L. Maton; Mr. S. Mills; Mr. W. Sainsbury; Mr. Northeast; Mr. John and Mr. James Burgess, Mr. Fowler and Mr. Fookes, from Dorsetshire; Mr. Adams, agent to His Royal Highness Prince Albert; Mr. Moore, agent for Earl Radnor. Mr. Sheridan, M.P., Mr. Sotheron, M.P., and other gentle-

men, were also represented by their agents. Almost all the above were purchasers. Besides these, most of the principal flock-masters in South Wilts, and many from Dorsetshire, were present.

After viewing the flock, the company partook of a handsome cold collation, which was laid out in a building prepared for the occasion; Mr. Thomas Ellman presiding, and Mr. Stephen Mills officiating as Vice. The constant arrival of parties from a distance made it later before the auction commenced, and it was nearly two o'clock ere the first lot was offered. After stating the conditions, Mr. Harding briefly adverted to the circumstance under which the sale took place—the death of their late friend Mr. Beaven—and that, consequently, there would be no reserve. He said he had never before had so many splendid animals to dispose of, and he deeply felt the responsibility of his situation; but the very circumstance of their great superiority rendered any observations on his part the less necessary—they would speak for themselves.

The ewes were offered first: their fine form and high blood excited universal admiration. Perhaps the prices were not so high as might have been expected, but they were perfectly satisfactory notwithstanding; ranging at from between 40s. and 50s. a head up to 114s. a head, at which price Earl Ducie was a purchaser. A few old broken-mouthed ewes went at a lower figure than we have mentioned. The lambs followed next; they were very neat, but small, and realized from 24s. to 29s. each, a small lot excepted, which went lower. Then came the rams; and, certainly, handsomer, neater animals, or showing more blood, were never offered. No. 1 brought 10 guineas; and from that sum up to £29 (at which price Prince Albert became the owner of No. 14), and down to £4 and £5 each, they were readily disposed of; £14, £15, £16, £17, and £18 a piece being the prices of several. The ram lambs fetched from £2 up to £7 a piece. On the whole, it was a good sale; but the circumstance of the great numbers of first-rate stock now bred, compared with former days, accounts for the absence of those very high prices which were some years ago given for stock of this description.

At the second day's sale some of the horses reached as high as £46, and, generally speaking, excellent prices were obtained for everything.—Wiltshire Independent.

AGRICULTURAL QUERIES.

FOOT DISTEMPER IN SHEEP.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—Having for some months past been troubled with the foot distemper in my grazing sheep, I was induced to try neurotomy on them, hoping that, by depriving them of all feeling in their feet, they would get fat; but, to my surprise, the operation, though apparently skilfully performed, had not the slightest effect on them. Could any of your correspondents tell me the cause of the failure? The nerve was divided on each side of the leg immediately above the fetlock joint.

I remain, yours, &c.,

A Grazier.

LAMENESS OF SHEEP.

Sir,—Knowing the *Mark Lane Express* to be the most valuable and popular paper amongst agriculturists for information, may I be allowed to ask whether any of your correspondents can give any information for the most effectual cure of the above disease. It attacks them very suddenly with great lameness, which causes, in the first place, loss of condition, also checks the ewes from taking the tup at the proper season, throwing them back for about a fortnight, until a new horn is formed, this being a subject of the greatest importance to flock-masters.

If you will be kind enough to place something of the above in your valuable paper, I shall feel particularly obliged.

I remain, your obedient servant,

Druce, August 19. A Junior.

SMUT IN WHEAT.

A correspondent would feel greatly obliged by one of our practical subscribers giving him "the result of his using blue vitriol as a preventive, and how he uses it per acre, &c., and whether he has found it answer as well or better than arsenic."

A correspondent wishes answers to the following queries as to the condition and management of agricultural horses:—

Should they ever be turned out to graze at all? and if so, when?

What is the quantity of keep required for each middle sized horse? and of what sort—oats, beans, chaff, hay, turnips, potatoes, or green meat?

Should they be watered, *after work*, at a pond or at a trough?

If in a stable, and out of work, how should they be exercised?

ANSWERS TO AGRICULTURAL QUERIES.

SMUT IN WHEAT.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—In reply to your correspondent's query respecting the use of blue vitriol, or sulphate of copper, as a preventive of the smut in wheat, I beg to observe that I have used it the last four seasons with complete success. The plan adopted is simple, cheap, and efficient. One pound of the sulphate of copper is placed in a wooden vessel (we keep an old bucket for the purpose; as it is very injurious to any metals it may come in contact with, from its corrosive nature); it is dissolved by pouring 1½ gallons of boiling water upon it, and stirring until the whole is held in solution; then add 1½ gallons of cold water, and it is ready to apply to the seed wheat, which should be previously placed in a heap on a paved floor. Pour the solution over the heap, and turn it over a few times with a wooden shovel, until *every grain* is *perfectly wetted*. If this essential point be neglected, success is out of the question. The proportions used are two pounds of the sulphate to one quarter of wheat. The price of genuine sulphate of copper is 5d. per lb.; so that, for an expenditure of 2½d. per acre, you may secure your wheat crop from smut. After mixing, the wheat should be thinly spread over the floor to prevent heating, and it will be dry and fit for use, either by drill or hand, in a few hours. I have minutely described the process, as I believe it to be the cheapest and most effectual remedy for smut yet discovered; and the trouble of mixing is nothing, neither is it injurious to jacks or drill. It is, at the same time, free from the great danger attending the use of so deleterious a poison as arsenic; although care should be taken to prevent domestic fowls eating any quantity of it, as cases have been reported of its proving fatal to them in large quantities. It will not injure the wheat for seed, if it is kept some considerable

time after being prepared; but I should not pursue that course from choice. Of the fact there can be no doubt, as I once dressed some wheat, in the way described, for sowing in November; but, from the wetness of the season, it was deferred until the spring, when it grew as well as if it had been fresh dressed. I have had but little experience with arsenic; but I considered that it destroyed the vegetative power of the wheat one season that I used it. Brining and liming are by some parties thought to be a preventive of smut. It was used on the farm I occupy, and the wheat was never free from smut: indeed, so one of my thrashers remarked to me; and he at the same time expressed surprise that we never have any now. In conclusion, Mr. Editor, allow me to tender you my best thanks for your untiring energy in advocating tenant-right and the repeal of the malt tax—two *essential requisites* to the prosperity of the British farmer. Yours obediently,

A Tenant Farmer.

South Berks, Sept. 8th, 1848.

BEST COW FOR THE DAIRY.

To the question, "What sort of cow is best calculated for the dairy in the county of Derby, where cheese pays the rent?" a respected friend has favoured us with the following answer:—"The native cow of that county is the old long-horned breed; these are scarce, and are found in a few dairies near the lakes in Westmoreland, in Lancashire, Cheshire, Shropshire, Staffordshire, Derbyshire, Warwickshire, Gloucestershire, and Oxfordshire. The breed is becoming deteriorated from the owners breeding in and in, as well as in some instances the milking qualities have been sacrificed to the butcher. Ten or twelve years ago I was desirous of having these cows, and with difficulty and trouble procured them from some of the counties before named; having gone to Westmoreland, north, and the Cotswold Hills, south, for that purpose. The results from experiments are that equal quantities of long-horned cow's milk and that of short-horned being mixed with rennet for curd, the long-horned milk yielded 23 per cent. excess in weight over and above the short-horns. The curd is of a richer quality; the milk is sweeter and richer to the taste. Parties have been repeatedly tried, but could always distinguish each by the taste, and these were children. I found the beef of an old long-horned cow very superior; the cream is richer, but I have not been able to discover much difference to the eye, equal qualities being put in glass tubes. They are longer in attaining full growth than the short-horns, but feed easier, *i. e.*, fatten quicker and upon inferior food. In grazing, they eat grass which the others reject; they stand the weather of our hills better, and are more certain in calving. The short-horns give more at first after having calved, but the long-horns hold it longer without *trucking*. One of mine gives now 13 quarts each meal, and she held on to 11, until she went dry last year. The long-horns are longer in attaining their full milk, but farmers have had them in full milk up to 17 or 18 years of age. With regard to weight when fat, a cow of mine weighed 13¾ score per quarter (*i. e.*, 32½ stone). She was not so fat as she might have been; had only eaten very bad new hay, which was ill got in the rain, and some turnips. I have invariably sent my cheese to the great fairs at Derby, held at Ladyday and Michaelmas; sold it publicly, and always got the highest price, and from 8 to 10 per cent. above the average. The hides are heavier, and much more valuable. More long-horns can be kept upon the same acreage of land."

CALENDAR OF HORTICULTURE.—OCTOBER.

Weather.

The last calendar was brought up to the 21st August, till when we had enjoyed but four really fine days; subsequently the 23rd and 30th proved sunny; all the other days were more or less showery, with general gloom, relieved only by partial gleams. The 31st was fine till four o'clock p.m., when a tremendous thunder-storm approached, which became very destructive in this vicinity. One farm lost several ricks, a barn, &c., &c., by a sudden conflagration occasioned by a thunderbolt, which divided as it approached the earth, and ignited the corn in an instant. Several persons in Croydon were prostrated, evidently by the sudden displacement of the air, as no other injurious effects were produced. September commenced auspiciously: the four first days were bright, with a mean temperature of day and night about 58 degs.; rain fell on the 5th, but the heat increased, and to the middle the weather was beautiful; a hoar frost, however, was seen at sunrise of the 13th, just after the full moon had set totally eclipsed. The meteorological diary will faithfully give the phenomena of each day, therefore more need not be said here, and the effects produced on vegetation will be noticed at the end of this calendar.

Operations in the Kitchen Garden.

General Notice.—I have frequently urged the necessity of bringing every part of the grounds into order; but no department so much claims this attention as the vegetable garden; where, if every weed be obliterated, and every vacant piece of ground digged, ridged, or trenched according to the proposed plan of spring culture, that soberness and propriety will be apparent which renders the winter garden a very pleasing object. But what shall we say of the reverse? and how many are there who permit weeds to cover the entire surface? Let the farmer in particular see to this crying sin; he has every appliance at hand, and ought to set a first-rate example, which in this department, as well as in his fields, would afford practical evidence of the great truth, that "the hand of the diligent shall bear rule."

Autumn is a season of quietude, but it is one wherein a safe foundation may be laid for all the works of spring. Therefore let the ground be deeply moved wherever it is intended to plant a

tree or shrub, manured where any brassicas are to stand; and as it appears by Mr. Way's analyses that peas and beans abound with phosphoric acid and potash salts, great advantage would be derived by the incorporation of bone dust and wood ashes with the soil where those crops are to be grown, especially if the earth be old and replete with decayed vegetable matter, in which case a peck or two slaked lime per square rod would act beneficially, by fixing the humic acid.

Potatoes.—As the condition of the tubers for winter supply is a question of moment, I would urge two methods of proceeding, by way of experiment. The first is to dig up one-third of any one plot, carefully and entirely if possible, to select every tuber diseased or even touched, and give those not rotten to pigs; to then store in a dry cool place the sound ones, for table use. Secondly—to weed the remainder, dig between the rows, after scattering a pound or two of salt over the length of a pole (5½ yards), and turn the earth ridge-wise over the potatoes left in the ground, so as to cover each row to the full depth of 6 inches; finally to fill the spaces dug out with any litter (not manure), old leaves, with old mortar, carbonized turf, or saw-dust. These potatoes, so left, to be taken up as required for use after the first parcels shall have been consumed. By proceeding thus we may acquire some knowledge of the protective power of the ground, and comparatively also in a degree, since each plot, or any known number of rows, will have been treated in two different ways.

Plant seeding *cabbage* of the August sowing where they are to remain; the ground must be rich; virgin loam is, however, of all things to be preferred—hence the great utility of working deeply, and bringing up a good subsoil. Cauliflowers are transplanted (to be covered with hand-glasses), or to vacant frames. Transplant also into frames lettuces of various kinds; George Lindley mentions a black seed, "Gotte" (?) He says, it will come in three weeks sooner than the earliest of the sorts named by him, which are the Bath cos, grand admiral, Hammersmith, and tennis-ball. If no July sown coleworts are in the garden, cut over the best of the summer cabbage, for supply of winter greens; these may also be obtained, pretty fine and early, by sowing some seed in a vacant small box, to be covered with its light when there is frost, over which a mat may be thrown. Plant shallots and garlic cloves, two inches deep, and about three times that distance asunder, to remain till July.

Hoe the ground, in dry weather, about broccoli, savoy, kail, and cabbage plants; if frost threaten, fill up the trenches of broccoli plants, or deeply earth those plants which are not in trenches, in either case making the heads stoop toward the north, because a hot sun, after snow or a strong rime, is apt to cause decay.

Winter spinach, thin out to 4 or 5 inches; the thinnings may be used at table: hoe and rake between the rows. If the plants were thinned early, and the leaves are now large, gather those only. The broad-leaved Flemish spinach will require 8 or 9 inch spaces.

Endive, continue to tie it up for blanching, or cover with sea-kail pots, watching the plants occasionally, to prevent decay and the attacks of slugs.

Celery must be progressively earthed; some of the earliest will now be quite ready for the table. Great care must be taken not to let earth fall into, or rise above the central growing leaves. Earth also the cardoons.

Asparagus, weed effectually, after having cut off the haulm that is yellow, within 3 inches of the ground; the seeds should not be permitted to drop about; it will be proper to save some of the finest for sowing in spring, to produce new plants for the garden, and also for forcing. Forcing is to be commenced over warm and deep beds of tree leaves or warm dung, on which a frame is placed, if there be no regular brick pits. Over the leaves some inches of fine earth are spread; on this two or three year old plants, raised for the purpose, are packed close, interspersing earth along the row, making it touch every root; thus proceeding till the bed be filled: finish by covering the whole with screened earth. But some may desire to excite asparagus in the natural beds without removal; in that case the haulm is to be cut over, and covered with earth, placing a frame or rough boarding around the allotted space, and round these a deep lining of strong manure; glasses or oil-paper lights are put over the whole, and a covering of mats in frost.

Plant sweet potherbs by slips, or chiefly by rooted offsetts, or by division of roots, as mint, in drills 6 or 8 inches asunder: baum, marjoram, chamomile, sorrel, thyme of both sorts, hyssop, winter savory, are thus raised: mint for the supply of winter is procured by planting in a frame with a very gentle bottom heat.

Fruit Department.

Winter pears and *apples* must be timely gathered, one by one; and to do this safely, also to know when each is fit for pulling, turn the fruit or raise it gently: if ready it will snap, the pears particularly, at a joint in the foot-stalk. All apples and pears of the finest quality should be laid separately on the shelves of a good fruit-house. Inferior fruit and cider apples may be laid in heaps for some time, to sweat, and thus acquire density of juice. Then lay dry clean straw over the floor of the fruitery, over that a layer of apples; then more straw, and another

layer; and so on to three deep, after which cover deeply with straw, and over that a linen sheet.

Wall trees.—Some persons prune now; but it is a safer practice to loosen the shoots somewhat, and to defer the general pruning till the mild weather of January or February.

Transplant, and also plant, all kinds of fruit trees or shrubs, and prepare orchard ground—the latter according to the ample directions in our article upon orchards in a former number. Generally open the ground, and work it deeply to twice or thrice the diameter of the roots—trickle the fine soil among them; expand the rootlets in an open, rather horizontal direction, water freely, fill up, and support the trees by two diagonal stakes.

Propagate gooseberries and currants by cuttings of last summer's wood divested of all the eyes but three uppermost, planting and fixing each in the mould, in rows ten inches asunder, and three or four inches deep.

Plant fresh raspberry canes—the white large Antwerp, and the red Fastolfe, or largest red Dutch: raise rambling suckers by the fork from the raspberry plots; weed and mulch the soil all over the surface.

Strawberry rows or plots.—Cut off all the strings close, leaving the main plants detached; fork the intervening soil a little, and dress it with decayed leaves, decaying fronds of fern or the like, so as to protect the crowns of the plants—without, however, letting the mulch drop into them.

Flower Garden, &c.

Clear the beds and borders thoroughly of old flower stems, decayed plants and litter; prune the shrubs of rampant, irregular branches, always cutting back to a shoot. Dig or fork the soil, thus destroying all the smaller weeds, and leaving the surface fresh and orderly.

Remove the tenderer exotics—salvias, pelargoniums, calceolarias, &c., that it may still be desirable to preserve; cut them far back, trim off some of the roots, pot, and place them in an open airy shed till frost set in, when they can be taken to a dry cellar for the winter. Dry airy pits are ever preferable to the greenhouse, where considerable numbers of verbenas and half hardy plants are kept. It is bad practice to cram such things under the greenhouse stages.

For bulbous roots a bed apart is to be preferred: introduce some river or sea sand, and a little salt; while digging the earth, make the soil regularly fine; plant hyacynths, tulips, ixias, gradioli, &c., by the hand trowel, and fill the holes with sand. Potted hyacynths for forcing, and for the sitting rooms, should be plunged deep (12 or more inches) in sand or coal ashes, till the flower-buds in the centres of the leaves become visible. When removed to the light the whiteness will speedily be changed to a vivid green, and the bloom will expand of its proper full colour.

Planting.

This is the season to introduce shrubs of every kind, laburnum, syringa, althæa frutex, jasmine, flowering raspberry, roses of all sorts, &c., and the evergreens, as garrya elliptica, berberis, arbutus, true bay, and rhododendrons: sandy loam and a little leaf-mould will do for all. If any hedges or box-edgings remain untrimmed, let the work be completed soon: it is already late, and if frost set in early, they may suffer.

Retrospect.

The weather has been fine, gloriously sunny through the course of September, to the 20th, hence all the crops are fine and abundant; fruit, however, is considered flavourless, owing to the long protracted rain, and paucity of sun. Some grapes may ripen, provided the sunny weather continue to the end of the month. Potatoes for winter store are now digged; reports are still very contradictory, but in the north they are very cheap, and the crop is stated to be sufficient. Time will bring the truth to light, but the public should be very cautious how it attaches faith to the printed announcements. The weather has continued fine, and this day has been very warm; but a change threatens to take place by or before the autumnal equinox of the 22nd inst.

Sept. 20th. John Towers.

INCLOSURE AND IMPROVEMENT OF COMMONS.—An act of the last session (11th and 12th Victoria, chap. 99) came into force on the 4th inst., to further extend the provisions of the acts for the inclosure and improvement of commons. It is to be taken to be part of the 9th and 10th Victoria, chap. 70, and the 10th and 11th Victoria, chap. 111, relating to the inclosure and improvement of commons. Extended powers are given to the Inclosure Commissioners by this act. It is provided that persons not interested in lands to be inclosed, may apply to the commissioners to submit such lands to the operation of inclosure. Maps of old inclosed lands are now dispensed with, and there is a provision to the effect that allotments of less than £5 value may be compensated in money. Expenses of maintaining private roads, &c., may be raised by a rate on the owners. Money raised for expenses is directed to be paid to the commissioners. By the 12th section it is enacted that, on the neglect of the owner of an allotment to fence, the owner of any other allotment prejudiced by his neglect may obtain possession, and do the necessary work, and obtain judgment in a county court, provided the amount does not exceed £20.

METEOROLOGICAL DIARY—1848.

	Barometer.		Thermometer.			Wind and State.		Atmosphere.		
Day.	8 a. m.	10 p.m.	Min.	Max.	10p.m.	Direction.	Force.	8 a. m.	2 p. m.	10 p. m.
	in. cts.	in. cts.								
Aug. 22	29.62	29.67	51	62	52	West, W. by N.	lively	cloudy	sun	fine
23	29.66	29.82	49	66	58	West, W. by N.	airy	fine	sun	cloudy
24	29.90	30.05	51	64	52	W. by North	brisk	cloudy	sun	fine
25	30.05	30.06	48	61	48	S.East, S.West	lively	cloudy	fine	cloudy
26	29.90	29.89	55	64	62	S. West	lively	cloudy	cloudy	cloudy
27	29.89	29.90	61	65	62	S. West	lively	cloudy	cloudy	cloudy
28	29.90	30.00	62	71	63	W. by South	lively	cloudy	sun	cloudy
29	30.02	30.00	59	69	58	S. West	gentle	cloudy	cloudy	fine
30	30.04	30.08	52	68	57	W. by North	gentle	fine	sun	fine
31	30.08	30.10	50	66	51	every way.	variable	fine	sun	cloudy
Sept. 1	30.18	30.28	50	66	56	N. by W., Sly.	airy	fine	sun	fine
2	30.38	30.38	48	66	58	N.W., W.by N.	gentle	fine	sun	fine
3	30.38	30.30	50	68	57	N. W., var.	gentle	fine	sun	fine
4	30.24	30.05	51	72	66	S. East	airy	fine	sun	fine
5	29.90	29.83	60	75	66	S. E., S. W.	lively	fine	sun	cloudy
6	29.85	30.03	58	70	57	W., W. by N.	gentle	fine	sun	fine
7	30.09	30.09	51	61	57	Westerly	gentle	cloudy	cloudy	cloudy
8	30.05	29.90	55	63	57	S. West	lively	cloudy	cloudy	fine
9	30.06	30.04	53	65	69	S. West	brisk	fine	sun	fine
10	29.83	29.62	55	62	57	S. S. West	brisk	cloudy	cloudy	cloudy
11	29.99	30.20	46	63	51	N. by W., N.	gentle	fine	sun	fine
12	30.30	30.31	42	54	47	N.W., N., S.E.	variable	fine	fine	fine
13	30.33	30.30	37	60	50	N. by E. by W.	gentle	fine	sun	cloudy
14	30.29	30.33	45	60	52	N. West	gentle	fine	cloudy	cloudy
15	30.40	30.42	43	65	52	N. E., S. E.	gentle	fine	sun	fine
16	30.43	30.43	43	70	54	S. West	gentle	fine	sun	fine
17	30.43	30.33	43	69	54	S. E., S. W.	calm	fine	sun	fine
18	30.32	30.20	44	69	54	N. West	calm	fine	sun	fine
19	30.02	29.87	42	64	52	S. East	gentle	fine	sun	fine
20	29.81	29.80	47	72	54	Southerly	gentle	fine	sun	fine

ESTIMATED AVERAGES OF SEPTEMBER.

Barometer.		Thermometer.		
High.	Low.	High.	Low.	Mean.
30.410	29.410	76	36	57.8

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
65.67	50.00	57.83

WEATHER AND PHENOMENA.

August 22: Fine; one shower. 23: Fine. 24: Shower; lightning at night. 25: a little drizzle; some sun. 26: Wet; damp; oppressive. 27: The same. 28: Much finer; oppressive heat; gorgeous sunset. 29: A little small rain. 30: Very beautiful. 31: Fine and hot till four; heavy thunder clouds, and a fearful storm.

LUNATIONS.—New moon, 28th day, 7 evening.

September 1: Very fine cirro-stratus in evening. 2: Fine harvest day. 3: The same. 4.: Beautiful; variegates, green at sunset. 5: Very fine till 4 p. m. 6: Lively and drying; generally sunny. 7: Overcast; drying air. 8: Broken clouds, clearing at night. 9: Some clouds, but fine. 10: Gloom; rapid clouds; and scuds of rain. 11: Lively cool day. 12: Fine, with occasional hazy gloom; lunar white halo. 13: Rime on the grass; fine sunny day. 14: Occasional misty gloom, alternated with fine sun; storm glass appears of late to be much disturbed. 15: Very beautiful. 16 and 17: Superb, perfect summer. 18: Warm and fine, with recurrence of gloomy haze. 19: Same; cloudy; perfect afternoon, and glorious sunset. 20: Another glorious day; but signs of a change are observed. The equinox is at hand, let it be carefully observed.

LUNATIONS.—First quarter, 5th, 8h. 43m. afternoon. Full moon, 13th, 6h. 18m. morning. Last quarter, 19th, 9h. 58m. night.

REMARKS REFERRING TO AGRICULTURE.—The weather may be said to have ameliorated during the last ten days of August, and to have become absolutely propitious in September. Never was there a finer period, and all the later crops must have been housed in perfect condition. It is a fact that some wheat has been injured, some has sprouted, and much was carried in a damp condition. The farmer has, however, himself to blame: the great secret of good harvesting depends upon correct adaptation to the seasons. In dry summers, cut when somewhat immature, and give ample field room. In wet, or catching weather, leave the crop till it be quite ripe, watch every opportunity, reap and carry forthwith. Facts, known and attested, confirm the rule; and it is better to save the corn, and carry it dry, than to risk all for the chance gain of a little more flour.

J. TOWERS.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR SEPTEMBER.

Although we present ourselves to the notice of our readers under more favourable auspices than was the case last month—when we had to dwell at some length upon the continued heavy rains and unpromising aspect of the fields, when great doubts and perplexities beset the minds of the agricultural body in respect to the result of the harvest—there are several matters demanding the most serious consideration, not only of the farmers themselves, but the consumers generally. First in importance, we consider the produce of this year's wheat crop. That this has failed to some extent, in some of our generally considered favoured counties—Essex and Kent, for instance—is a well ascertained fact; and that a large portion of it has been carted in very bad condition, is equally certain. In the western and southern parts of England, sprouted samples of wheat are frequently to be met with, and the yield is represented as barely an average one. North of the Humber, however, as well as in most of the midland districts—where less rain has fallen this season than elsewhere—the wheat crop is turning out good, both in quantity and quality. This is a subject to which we have given our almost undivided attention; and after the most mature consideration of it, and the most diligent inquiries, we feel ourselves justified in asserting that the yield for England is nearly, or quite, an average. In the ordinary run of seasons, we might, under such circumstances, and with the knowledge that the stocks of old English wheat on hand are good, anticipate a reduction in the present value of wheats as well as other articles of grain, which appear to have been gathered in good condition; but the continuous increase in the consumption, and the position of Ireland—where scarcely any old stocks are to be met with—seems to forbid such a supposition. During the present year, upwards of 3,500,000 quarters of various kinds of foreign and colonial produce have arrived in this country, and passed into consumption, without having had much effect upon value. At the present time, the duties upon foreign grain are ruling at their lowest point for the season; hence the importers are releasing their stocks. This circumstance will, possibly, reduce the prices 2s. or 3s. per quarter; but we are decidedly of opinion that no material fall can take place in them between this and the commencement of March next. Our reason for this opinion is chiefly grounded upon the loss of a large portion of the potato crop, not only in England, but likewise in Ireland. The barleys appear to have been mostly secured in good condition; and it is evident that we shall not experience a scarcity of malting qualities during the forthcoming "season." Oats, beans, and peas, are by no means heavy crops. The imports of foreign wheat, barley, and oats, have been on a liberal scale; but those from Ireland have not been equal to the exports. This is, we conceive, direct evidence of the extensive consumptive demand there, and the security for present prices.

The various English markets have been tolerably well, but not to say heavily, supplied with home-grown wheat, the sale for which—notwithstanding a slight fall has taken place in value—has ruled steady. Spring corn has moved off slowly on lower terms. The provision markets have been heavily supplied, and all kinds of fat stock, as well as dead and salted meats, have sold on easier terms.

Throughout Ireland and Scotland harvest work has progressed somewhat rapidly. As far as we have been able to ascertain, the new wheats have yielded well: and the same remark may be applied to Spring corn. The cattle trade has ruled somewhat heavy, and prices have not been supported.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

In reviewing the state of the cattle trade during the past month, one or two important features have presented themselves deserving particular notice. From the returns of the supplies of fat stock on sale in Smithfield, it will be perceived that the graziers have liberally—in some instances heavily—supplied the metropolitan market with beasts: and we may observe that those held in the provinces have exhibited numbers considerably in excess of those shown at previous corresponding seasons. It is, therefore, tolerably certain—indeed we have the best authority for making the observation—that the supply of beasts at this time in the country, and fit for the butcher's purpose, is somewhat above an average.

It must, we conceive, be evident to all practical men that the supplies of English stock are likely to increase, for the all-important reason that, for some

time past, consumption has not rendered it necessary to draw largely upon the graziers' resources; and that immense numbers of foreign beasts and calves disposed of in our various markets have sold for grazing purposes—yet to be offered for sale—and which are calculated to have a depressing effect upon value for some time hence. The improved system of culture introduced into many parts of Ireland—viz., the raising of large additional quantities of green food—has not been without its effects upon the demand for, and value of, beef in this country. Statistics inform us of the arrival at Liverpool and Bristol of immense numbers of beasts from the sister country, mostly in poor condition; and not a few have arrived in London of full average weight. That the number of store animals will increase is evident from the letters which have reached us from Ireland; and we may observe that our Midland Counties are literally "full" of Irish stores, bought at a very low price, but which, in our judgment, are ill-calculated to produce anything like a good return. Be that as it may, it is certain that the supply of fat stock will exceed the demand to some extent; hence it follows, as a consequence, that low prices must be the result. The question to consider, however, is—Are we to look for any serious falling off in the foreign importations during the winter months? From all that we can learn, notwithstanding the passing of an Act by our Legislature prohibiting the importation of diseased stock, it is certain that an increase, and not a decrease, in the imports may be calculated upon from Holland; though we expect a falling off in the receipts from Germany, where the disease in sheep continues to manifest itself to a somewhat serious extent. The continued unsettled state of things in France, the almost total absence of demand for beef in the French markets —Paris in particular—owing to the small number of English residents and visitors there, have produced heavy importations of beasts from the different French outports. These animals, which very much resemble those produced in Prussia, both as to weight and symmetry—though they have turned out much better for the table—have sold in London and elsewhere at prices quite equal to those paid for our best short-horns. As the French ports remain open during the winter months, we may look for somewhat extensive arrivals thence during that period, and which will, we think, nearly or quite counterbalance the falling off which usually takes place from Holland in the cold weather.

It has, we find, been assumed by some persons that very large profits have been made by the Dutch farmers, as well as those who have speculatively entered into the foreign cattle trade. With very few exceptions, very large sums of money have been lost by the speculations; and the exceptions refer solely to the stock imported in really prime condition. Take the sheep as an illustration of our observations. In Smithfield many of them have sold as low as 10s.; others as high as 44s. per head. The beasts have varied in value from £8 to £22 each. Be it observed, the same charges for freight, &c., are entailed equally upon the inferior as upon the most superior stock; hence it must be obvious that the low-priced animals have been disposed of at a loss to the importers, especially when we remark that both beef and mutton are selling at prices relatively higher in Holland than with us. And yet the Customs' returns show an extent of supply for our markets, which, possibly, the advocates for the admission of foreign stock never dreamt of. But will low prices in this country produce a material falling off in the importations? That appears to us to be almost wholly out of the question. Years since, and Holland supplied the French markets liberally with stock; now there is scarcely any demand for it there, with very little chance of any increase in it. Animals have been bred and fed to an extraordinary extent in nearly all parts of the Netherlands, especially for the traffic; and England is the only market to which they can be sent, and from which gold can be had in return. Prospectively speaking, our prices are likely to rule low, and unremunerative to the grazing community.

We regret to state that several instances have come under our notice in which the English breeds of sheep have been attacked by the small-pox; but as they have been almost immediately slaughtered on the disease presenting itself, we entertain a hope that the evil will be speedily arrested. The government inspectors in London and at the outports, and who are well qualified for their important post, are acting with vigour in preventing diseased sheep: one or two seizures have been made during the month.

The fineness of the weather has produced a great abundance of pasture herbage in all parts of the United Kingdom; and, notwithstanding most farms are well stocked, great difficulty has been experienced in keeping down the grass sufficiently low for the sheep. The quantity of old hay on hand is large, that of new, both first and second cut, very extensive; hence we may safely assume that no want of food will be felt for some time, especially as the turnip crop is turning out abundant and of excellent quality.

On each market-day Smithfield has been well supplied with each kind of fat stock, the demand for which has ruled exceedingly heavy, at drooping prices. Beef, mutton, and lamb have fallen from 2d. to 4d. per 8lbs. In the value of calves and

pigs no material change can be noticed. Clearances have not been effected on any occasion.

From the annexed comparison it will be seen that the total supplies of beasts brought forward in Smithfield have been seasonably extensive. We may observe, however, that their quality has been by no means first-rate. The numbers of sheep and lambs have exceeded those shown during the month of August, current year, by about 8,000 head.

COMPARISON OF SUPPLIES.

	Sept., 1846. Head.	Sept., 1847. Head.	Sept., 1848. Head.
Beasts	18,611	22,492	21,714
Cows.....	447	456	421
Sheep and lambs ..	154,260	161,340	161,230
Calves	2,167	3,324	2,707
Pigs	2,591	2,137	3,153

Since our last report the bullock droves have been derived as under:—

	Head.
Northern districts	5,000
Eastern, western, midland, do.	4,600
Other parts of England	3,450
Scotland	572

The remainder of the supplies have been derived from abroad and the neighbourhood of London.

COMPARISON OF PRICES.

Per 8 lbs. to sink the offal.

	Sep., 1846. s. d. s. d.	Sep., 1847. s. d. s. d.	Sep., 1848. s. d. s. d.
Beef, from	2 10to4 2	3 0to4 8	2 6to4 0
Mutton	3 10to5 0	3 8to5 4	3 4to5 0
Lamb	4 10to6 0	4 2to5 8	3 8to5 0
Veal	3 10to4 10	4 0to5 2	3 2to4 2
Pork	3 10to4 10	4 0to5 2	3 10to5 0

An immense increase has taken place in the foreign importations compared with those received last month, when we received only 2,526 beasts, and 14,266 sheep into London. The same observations may be applied to the outports.

COMPARISON OF THE FOREIGN IMPORTATIONS.

	Sept., 1847. Head.	Sept., 1848. Head.
Beasts	4,000	4,301
Sheep and lambs	14,683	21,681
Calves	1,362	1,625
Pigs	270	55
Total	23,315	27,669
Outports	12,271	12,735
Grand total .	32,586	40,404

Newgate and Leadenhall markets have been well supplied with both town and country-killed meat, the demand for which has ruled heavy, and the general quotations have had a downward tendency. Beef, from 2s. 6d. to 3s. 6d.; mutton, 3s. 4d. to 4s. 6d.; lamb, 3s. 10d. to 4s. 10d.; veal, 3s. 4d. to 4s.; and pork, 3s. 4d. to 5s. 2d., per 8lbs., by the carcass.

DURHAM.

During the past month the weather was excessively wet and unfavourable for the harvest in the southern and midland counties of England, and also for out-door farm-work in general. Wheat was in some instances housed and put together in an unfit and damp state, consequently some months must elapse before it can advantageously be brought to market. In some localities sprouting began to appear, but we are not aware that the injury sustained was extensive. For nearly the last month the weather has been remarkably propitious, and everything the farmer could desire for the harvest, in the northern counties and also in Scotland; consequently the wheat has been all secured in the finest condition. Our markets have been well supplied: the quality is superior, and weighing heavier than last year. Upon the loamy, drained, and well cultivated land the crop is a full average; but on the poor, wet, clayey, and retentive subsoils the crop was thin on the ground, and yield defective. It is gratifying in having to observe, that we have visited a large surface of country both in England and also on the continent, and we have no hesitation in stating that the wheat is superior to any other crop, and we think a full average one. In the midland counties, and more particularly in Lincolnshire, the crops appeared abundant. In France and Belgium, wheat and rye in the extensive corn districts were very fine and superior, and secured in the finest possible condition, and quality very superior. The potato crop appeared healthy, and free from disease. Barley and oats are unusually late, being of two growths; consequently the quality will prove inferior, and we think below average crops. This remark will also apply to the continent. Beans and peas are inferior crops, the latter being considerably below an average. The bean crop in Belgium is remarkably well podded and healthy. It is with extreme regret we have to observe that the potato disease has committed its ravages, more or less, in every part of England and Scotland. An unusually large breadth was planted this season, and the crop assumed a very healthy and vigorous appearance until the middle of last month; since then the complaints have become very general and distressing. We fear that their future cultivation will in many cases be abandoned. Turnips are extremely various: the early-sown are promising, but require rain; the late-sown are backward and patchy, and should early frosts set in, the latter will be deficient of keep. Farmers were prevented in sowing their usual quantity of turnips, in consequence of the wet season. The hay crop was light, and the fogs or aftermaths do not promise abundance of keep. Pastures have become dry, and rain is much required. Our cattle markets, both fat and lean stock, have a downward tendency. At Durham Harvest Fair, held on the 15th instant, a small supply of stock was exhibited, and the attendance of both farmers and dealers was not numerous, the former being much engaged with the harvest; business was in consequence without animation. Extensive losses of cattle have been recently sustained from diseases of the lungs, which in almost every instance has proved fatal. We have been abundantly supplied with Irish reapers, and prices and wages have been considerably lower than in former years. A number of hands are without employment. It was prophesied that free trade would be productive of much beneficial results, but we think good times are long in coming.—Sept. 22, 1848.

NORTHUMBERLAND.

The following table is extracted from the "Meteorological Register," kept at the rooms of the Literary and Philosophical Society, Newcastle-upon-Tyne; the observations for which are made at an elevation of 121 feet 3 inches above the level of the sea, 18 feet 1 inch above the ground, and in 54 degrees 58½ minutes of north latitude:—

Week ending	Maximum of range of daily observation.	Therm. daily mean.	Minimum of range of daily observation.	Therm. daily mean.	Mean of daily observation for both max. and min.	Number of days on which rain fell.	Depth of rain in inches.
Aug. 16..	58 to 64	60.14	39.5 to 48.5	46.28	53.2	2	.32
23..	56.5 67	61.8	44.5 54	48.	54.9	1	.28
30..	57 68	63.14	38 56.5	48.21	55.68	3	.25
Sept. 6..	61 74	65.57	47 55	50.36	57.96	1	.07
13..	53 65	59.71	34.5 55	45.43	52.57	1	.13
					Total	8	1.05

During a period of full six weeks at this season of anxiety to the husbandman, and importance to the nation at large, the weather has been unusually dry, with a warmth of atmosphere sufficient to bring the ripening crops to maturity, and accompanied also by bright sunshine and brisk drying winds so as to prepare the sheaves for being secured in the stack; the corn harvest throughout the district, comprising the counties of North Northumberland and Durham, except here and there a small patch of late sown wheat after turnips, and a small portion of oats in the more elevated localities, has been brought to a conclusion under as favourable circumstances as it has ever been, on any previous occasion, remembered to have been. Sufficient has already been thrashed to enable an opinion to be pronounced on the produce of the harvest of the present year in the district above-named. From a low average temperature during the latter part of spring, and throughout the summer, wheat upon land of a cold nature, and in exposed situations, is by no means a bulky or a large yielding crop from the straw; but this remark does not apply to warm and well drained loams, as on such description of soils the crop is generally abundant. The quality of the species of grain now spoken of is somewhat variable; that which came earliest to the sickle, in consequence of the great quantity of rain that fell during the latter part of July, whilst it was in progress of ripening, is somewhat coarse; but all that ripened during the genial weather that succeeded is remarkably fine. In speaking of the wheat crop in this district as a whole, it may be characterized as good, although not very abundant in quantity: and although not universally of the extraordinary quality of 1846 and 1847, yet the quality of the wheat of the crop of the present year is generally excellent, in many instances quite equal to the best produced in the former years spoken of; as samples of the new crop, weighing 63 to 65lbs. the imperial bushel, being by no means uncommon, sufficiently attest the fact. Oats and barley are both of them a fair crop as to quantity, neither species of grain being to be characterized by any notable abundance or deficiency, and the quality of both good. Rye grown by itself is scarcely known in this district, but in two or three localities it is sometimes sown in slight admixture with wheat on very light sandy soils, and the breadth of land appropriated to such a crop is so trifling as to be unworthy of notice in this report. Beans and peas are grown but to a trifling extent in the district under review, and so little attention bestowed upon their cultivation as to be subject of little interest in the report; it should be stated, however, that a great portion of these crops grown in the district yet remain to be secured. Previous to dismissing the subject of harvest it remains to be stated that little of any kind of grain of former years' growth remains in the hands of the farmers, and the stock of old wheat appears to be completely exhausted, from the supply of that grain even at so early a period is almost entirely confined to the new crop, which circumstance, in a district like that under consideration, in which the import of grain exceeds the export, is worthy of notice to those who may be desirous of estimating the quota Northumberland and Durham may afford towards the supply of the consumption of the population of the kingdom at large. Of green vegetable field crops, potatoes have been planted to a much greater extent than for the last two years past; and although the rot has appeared in a partial degree, the extent of the disease in Northumberland and Durham is trifling, compared to the loss that is reported to have been sustained in the adjoining county of Cumberland, and in other neighbouring districts. Turnips are everywhere throughout the district promising an abundant produce, except in the Vale of Tyne, where a partial failure of the crop has taken place. The prices of fat stock, both cattle and sheep, have been, throughout the past season, subject to little fluctuation, 7s. per stone for prime beef and 6½d. per lb. for wether mutton of the best quality having been pretty firmly maintained; and the great increase of the supply of Newcastle cattle market in the present season over that of the corresponding period of last year, as shown by the table below, has not in any wise tended to a depression of prices, the increased demand, especially for sheep for consumption in the midland and southern parts of the kingdom, having been fully equal to the demand. In reference to the present being an agricultural report of a district comprising the counties of Northumberlnd and Durham, it should be observed that, previously to the present season, the supply of the Newcastle, market was confined to the counties of Northumberland, Cumberland, Roxburgh, and Berwick, but at present the district from which the supply is drawn is much extended by the facilities afforded for the conveyance of stock by the completion of railway communication in Scotland, to which circumstance the great increase in the supply is to be for the most part attributed.

Statement of the Supply of Beasts and Sheep at Newcastle Cattle Market from August 15 to September 19, both days included, in the present year, and that for the corresponding period in 1847.

1848	Beasts, 2,920	Sheep and Lambs,	38,300
1847 ..	,, 2,235	,,	16,967
Increase in 1848	,, 685	,,	21,333

—Newcastle-upon-Tyne, Sept. 21.

WORCESTERSHIRE AND GLOUCESTERSHIRE.

Harvest is very nearly, if not entirely, completed; and the late crops have been secured in much better condition than those which came to the sickle during the unfavourable weather of August. The weather during the last three weeks has been beautifully fine, and it has not only aided the completion of harvest, but it has also assisted the cleaning operations, which are so essentially necessary before another year's crop can be obtained. The system of clearing bean-stubbles for wheat upon the strong lands of this district being rather peculiar, I shall give you a description of it. The land is breast-ploughed at a cost of 7s. or 8s. per acre; and after harrowing, the stubble and weeds are raked into heaps, and burnt; the ashes being spread, and the land harrowed, completes the preparation for the wheat. By this simple and economical practice the land is cleared of weeds, whilst it retains that solidity which is so essentially necessary as a preventive against the plant being thrown out by frost, and also against its becoming root-fallen at a later period of its growth. The practice of clearing wheat-stubbles is somewhat similar; and, whilst it has much to recommend it, yet I think it is carried too far in some instances, or not far enough in others. The wheat being generally reaped, the stubble is in too many cases consumed, after breast-ploughing the surface. This is a wasteful practice, that is avoided by some farmers carrying the stubble to the fold yard; but if it is not required for litter, it might at this season of the year be converted to a valuable use, if it was employed upon the land in the process of stifle or clod-burning, which has been proved to be productive of such vast benefit upon the strong land of other counties; and that it would be equally beneficial upon the clay

soil of this district is proved by the advantage which is now derived from the system of burning soil in large heaps with coal. I would suggest, therefore, that during a dry season like the present one—when the breast-plougher is so busily engaged, and the country filled with the smoke of the burning stubble, which at night shows itself in the numerous small fires—that each heap of stubble should be covered with a coating of small clods and soil previously to the fire being applied; and it would be found that a quantity of ashes and charred soil would be obtained at a very trifling expense by merely converting a wasteful practice into an economical one. Old white wheat is worth from 6s. 6d. to 7s.; new, from 6s. to 6s. 6d. Old red wheat, from 6s. 4d. to 6s. 8d.; new, from 5s. 6d. to 6s. 6d. per imperial bushel. The new wheat, as may be expected, comes to market very damp, and some samples are nearly unsaleable. Barley is selling from 4s. to 4s. 6d. per imperial bushel. The cattle fairs are well supplied with fat stock; in some instances the supply is more than equal to the demand. Beef averages 6d., and mutton 6½d. per lb.—Sept. 22.

GOSFIELD HALL ANNUAL SALE, BY MR. J. S. SURRIDGE.—This stock sale was attended by a most numerous and respectable company. A bountiful luncheon was provided in a large marquee on the lawn at Highgates Farm, adjoining the park. Mr. Fisher Hobbs was requested by Mr. Morris, on the part of Mr. Barnard, to take the chair. He was supported by Holt White, H. Hanbury, W. Sandle, Sparrow, Brooke, Langley, Crush, Brewster, Minns, and Tabor, Esqrs., and a great number of the principal agriculturists of this and the adjoining counties. After the repast Mr. Hobbs proposed the health of the Queen, Prince Albert, and the rest of the royal family, Mr. Barnard, Mr. Morris, and Mr. Surridge, the officiating auctioneer, who, in returning thanks for the honour conferred upon him, assured the company he had some very excellent stock to sell them, and that they might rely upon their being perfectly clean and healthy. He was fully authorized by Mr. Barnard to submit them without the least reservation. He requested them to view the stock, as he had many friends who had not had any refreshment, and he was anxious to proceed to business. The booth was again filled, and when the party withdrew the auction commenced with

10 lots of full-mouthed ewes, which averaged			29s. per head.
140 4-shear ewes,	ditto	over	36s. —
40 3-shear ewes,	ditto	,,	35s. —
180 2-shear ewes,	ditto	,,	34s. —
71 shearling ewes	ditto	,,	29s. 6d.—
251 wether lambs,	ditto	,,	26s. —
51 ewe lambs,	ditto	,,	21s. —

The tups sold.....from 5½ gs. to 20 gs.
Short-horn heifers ...from 14½ gs. to 16 gs.
Short-horn bulls.....from 17 gs. to 50 gs.
Short-horn steers ...from 11½ gs. to 18 gs.

There was a fair competition for the stock, which was universally acknowledged to have done Mr. Morris, the steward, much credit. Mr. Fisher Hobbs was the most extensive purchaser of sheep. Messrs. Brewster, Crush, Sach, Bloomfield, Alger, Hutley, Langley, Cockerell, Ambrose, Tabor, Pettits, Nott, Baker, Fitch, Start, Bridge, Sparrow, Newman, T. Wade, and Thos. Jeggs, were also considerable purchasers.

SALE OF MR. WILSON'S SHORT-HORNS AT BRAWITH, NEAR THIRSK, BY MR. WETHERELL, ON TUESDAY LAST.—COWS.—Victoria, 20 guineas. Curioso, 21 gs. Gaiety, 29 gs. Lucy, 34 gs. Ceres, 24 gs. Miss Wharncliffe, 21 gs. Fanny, 50 gs. Mary Ann, 35 gs. Jewel 50 gs. Certainty, 40 gs. Curl, 22 gs. Verbena, 18 gs. Gaiety, 33 gs. Cherry-ripe, 50 gs. Curioso 2nd, 20 gs. Melrose, 19 gs. Uncertainty, 46 gs. Curioso 3rd, 21 gs. Certainty 3rd, 54 gs. Christabella, 30 gs. Vainless, 37 gs. Ceres 3rd, 30 gs. Moss-rose 2nd, 160 gs. Emma 2nd, 25 gs. Emma 3rd, 37 gs. Gaiety 3rd, 90 gs. Sally O'More 3rd, 70 gs. Moss-rose 3rd, 80 gs. Stetely 2nd, 62 gs. YEARLING HEIFERS.—Brawith Lass, 29 gs. Borrowby, 105 gs. Lucy 2nd, 19 gs. Gaiety 4th, 15 gs. Vixen, 16 gs. Curioso 4th, 15 gs. Celia, 7 gs. Sylvina, 19 gs. Miss Wharncliffe 2nd, 13 gs. Lucy 3rd, 17 gs. Eva, 21 gs. Pretty Lass, 13 gs. Clytemnestra, 17 gs. Castanette, 10 gs. The Lass of 19, 28 gs. Cigaretta, 24 gs. Serious, 25 gs. Seriousness, 19 gs. Canoe, 6 gs. Media, 49 gs. BULLS.—Emperor, 145 gs. Brawith Boy, 23 gs. Baron, 29 gs. Borrowby Boy, 92 gs. Sir Walter, 15 gs. Gone Away, 15 gs. Merry Boy, 21 gs. The Jeweller, 38 gs. Gay Lad, 29 gs. Rory O'More, 13 gs. Boggle Beau, 9 gs. Vingerella, 12 gs. Mazeppa, 11 gs. Crom-a-Boo, 9 gs. Fitz-Walter, 56 gs. Upstart, 12 gs. What's Aloft, 12 gs. Eugene Aram, 42 gs. Start Again, 7 gs.

MR. RIGDEN'S FLOCK, AT HOVE.—Among those present were the Earl of Chichester, Mr. Webb (Babraham), Mr. Catt, Mr. Turner (Chinton), Mr. Farncombe (Bishopstone), Mr. Tanner (Patchem), Colonel Hall, Mr. Ward (Kent), Mr. Johnson (Kent), Mr. Williams (Berkshire), Mr. Hodson, Mr. Hardwicke, Mr. Blaker, Mr. N. Hall, Mr. Hallet, &c., The full-mouthed ewes were put up first, and produced considerable competition. Mr. Williams purchased the first lot of five at £5 15s. each; the Earl of Chichester purchased the next lot of five at £5. The remainder, which were sold in lots of ten, ranged in price from £1 16s. to £3 6s. each. Mr. Dixon (from Scotland), Mr. Johnson, Mr. Boys, Mr. Banister, Mr. Webb, Mr. Ward, and Mr. Lands were the principal purchasers. Ten ewe tegs fetched 40s. each; and another ten 42s. each. Ewe lambs realized from 21s. to 28s. each. The three year old ram, which obtained a prize at the County Show at Lewes, and which was the produce of a ram of Mr. Webb's, and a ewe in the Glynde flock. was let to Mr. George Farncombe for twenty Guineas. Mr. Tanner hired the same ram last year at 36 guineas. The ram which obtained a prize at the County Show at Worthing was let to Mr. Johnson for 21 guineas. A two year old ram was sold to Mr. N. Hall for 15 guineas, and a two-tooth ram was let to Mr. Hallett for 12½ guineas. They were all from the Glynde blood. A yearling ram was sold to Mr. Warner for 8 guineas; and another to Mr. Nathaniel Blaker for 6½ guineas. For the ram lambs there was considerable competition. Some of them sold remarkably well, but the prices varied materially, ranging from 2½ guineas to 11½ guineas. After the sale, Mr. Rigden entertained several of his friends to dinner.

MR. JOHN ELLMAN'S SALE.—Among the company were the Earl of Chichester, J. V. Shelley, Esq., Capt. Mackay, Messrs. John Hillman, W. Allfree, Rigden, Drewett (of Peppering), J. Smith, Farncombe, Bull, Botting (of Westmeston), Hart, Turner, J. Webb (of Essex), Robinson, Burton, Boys, Valentine, W. Waters, &c. The first lot of ewes, one year old, was knocked down to Mr. Drewitt, for 44s.; the second to Mr. Allfree (of Ilford), for 50s.; the other eight lots obtained from 34s. to 46s. a-head. Five full mouthed ewes were knocked down to J. V. Shelley, Esq., at 12½ guineas; and another lot for 8½ guineas to Lord Ducie; three other lots of five fetched from £3 to £3 10s. Other lots of ten full mouthed ewes were sold from 34s. to £3 a-head. The letting of rams then took place. The only lets were to Mr. Rigden for 15 guineas; to the Earl of Chichester for £10 10s.; and Mr. Kent (of Southease) for £10. The letting being so dull, the rams for sale were not brought to the hammer; but we understand that Mr. Ellman will let or sell them privately, on application.

GAME.—J. A. Gordon, Esq., of Naish House, has issued the following circular to his tenants. The spirit in which it is couched is liberal, and the arrangement is calculated to keep up a good feeling between landlord and tenant. "Naish, 30th August. Dear sir,—Upon condition of your sending me here one in four of every head of game, woodcocks, snipes, and rabbits, that are killed upon the lands you hold of me, I permit you to sport on such lands, either by yourself or by others who have your written permission, unless I should object to them.—I am, dear sir, yours faithfully, JAMES ADAM GORDON."

REVIEW OF THE CORN TRADE

DURING THE MONTH OF SEPTEMBER.

At length harvest operations are drawing to a close; indeed, beyond a few patches still abroad in the late and mountainous districts, there is now little corn remaining in the fields.

The splendid weather experienced during the first three weeks in September has been the means of saving the country from an immense amount of misery. Towards the end of August the prospects were of the most gloomy kind; a very large proportion of the crops was abroad; the almost constant rains in August having prevented farmers carrying, and, had the wet continued, the damage would have been irreparable: fortunately a complete change of weather took place, and with the exception of a heavy thunder-storm on the 2nd instant, and a few partial showers more recently, we have had uninterruptedly fine weather throughout the month. So favourable an opportunity has not been neglected by farmers, and the greatest activity has prevailed; indeed, rather too much anxiety was at first shown to get the corn housed, and a considerable quantity of grain was carried in the early part of the month in only moderate condition (owing to the fear of a return of wet), which would have been greatly improved by an exposure in the fields to the subsequently experienced hot sunshine and drying breezes. On the whole, however, the harvest has been finished much better than the most sanguine could have anticipated, considering the position of affairs when we last addressed our readers. In the northern parts of England and Ireland, and throughout Scotland, the quality of the corn has been little, if at all injured; and though the yield of wheat will, taking the kingdom collectively, unquestionably be below that of tolerably good average seasons, the deficiency will not, we trust, prove so great as to cause a high range of prices.

The crop has not, as yet, been subjected to the test of thrashing in the northern counties; and it is too early to form anything like an accurate judgment of the extent of the deficiency, but that the falling off in the south and west will be serious admits of no doubt. Many of the counties from which the metropolis derives the greater part of its supplies have fared very badly. In Essex and Kent the yield of wheat to the acre is probably from a quarter to three sacks short of what it was last year; and there is reason to believe that the east and north will be called upon to furnish more extensive assistance to the south and west than in ordinary seasons.

Barley has been much injured in colour by the excess of wet, but is otherwise of tolerably good quality, and not, we believe, particularly defective in quantity.

In England oats have been less grown than usual this year; but, for the breadth sown, the produce is fair. In Scotland and Ireland this grain has yielded well, and in the first named country the quality is described as very fine.

Beans are certainly a good crop, and peas by no means bad.

The constant rains in August, and the subsequent fine weather, caused a rapid growth of grass, and rather a heavy second crop of hay has been secured. This, with the abundance of all kinds of green food, will assist in affording keep for cattle, and economise the use of corn for that purpose. The partially damaged potatoes have also been largely used for feeding, and there must consequently have been a great saving of oats, beans, and peas.

This is a point which must not be overlooked when the future is under consideration, for the saving thus effected will assist to afford the means of support hereafter. The same may be said with regard to the very large consumption of potatoes; the poorer classes have been almost living upon that root during the time the price was low; hence, less flour has been used; and as the harvest has been fully a month later than in good years, we shall, in all probability, have to provide for only eleven instead of twelve months' consumption out of the crop. We are consequently inclined to think that no cause exists to apprehend a high range of prices; and our own impression is that quotations will not vary much for some time to come. Whilst farmers are engaged in preparing the ground and sowing the autumn crops, the supplies may, perhaps, fall somewhat short of the demand, and cause a temporary advance; but even this is questionable, as most of the millers have foreign wheat on hand, and will, therefore, be enabled to do with a comparatively small quantity of new English. The duty is now, and is likely for a time to continue, at the lowest point under the existing law, namely, 4s. per qr. Previous to its falling to the

minimum about 300,000 qrs. of wheat were accumulated at the different ports on the coast and in the London warehouses; and from the purchases made abroad, on English account, during the last month or two, we may calculate on continued and regular foreign supplies as long as the northern ports of Europe remain free from ice. From America the shipments of wheat are not likely to be large until the spring of next year, but of Indian corn we may calculate on receiving considerable supplies from the other side of the Atlantic. It seems, therefore, that there is little reason to fear anything like scarcity during the winter months; and on the 1st of February next the duty on all kinds of grain will, it must be recollected, be reduced to a merely nominal rate; hence, it appears to us somewhat hazardous to speculate on any material rise on present quotations. On the other hand, there is, in our opinion, as little chance of any decline of importance, at least during the winter; and a steady wholesome business at about existing rates may, we think, be pretty safely reckoned upon.

The change from unusually wet and unfavourable weather to that of altogether an opposite character was not without effect in the beginning of the month. The disposition to enter into speculative investments, which was by no means wanting in August, was immediately checked, and many parties who had made free on board purchases at foreign ports during the excitement, became anxious to realize. The consequence of this state of things was a simultaneous decline in the price of wheat, of about 5s. per qr., at all the leading markets in the kingdom. This important fall had, however, the effect of checking the deliveries from the farmers, and subsequently a firmer feeling was again restored.

The arrivals of wheat coastwise into the port of London have been decidedly small throughout the month. The largest supply was the first week in September, and the bulk of the arrival consisting, on that occasion, of new wheat in bad condition, no surprise can be felt at the extent of the fall which then took place at Mark-lane. For some time factors remained firm, but ultimately they had to submit to the offers made by millers, which were at least 5s. per qr. below the rates at which sales had previously been made. This reduction caused a good deal of sensation in the country, and was not very willingly submitted to by the growers. Confidence was during the subsequent week in a great measure restored, and on the 11th, the succeeding Monday, prices remained stationary at Mark-lane. The sparing manner in which the market was afterwards supplied, and the fact that many of the millers were in want of fresh new wheat for mixing, imparted something like activity to business on the 18th, which enabled factors to recover a portion of the previous decline, prices being then quoted 1s. to 2s. per qr. higher than on that day se'nnight. Since that period a reaction has again occurred, and the sales made on the 25th were at prices little, if any, higher than those current previous to the rally—say 44s. to 54s. for new red, and 48s. to 58s. per qr. for new white wheat. These rates, when compared with the quotations at the close of August, will show a fall of fully 5s. per qr. A large portion of the samples lately brought forward, the growth of Kent and Essex, have been unfit for millers' use, and have been taken by the starch makers, at about the lowest of the foregoing quotations.

The arrivals of wheat from abroad into London have been on rather a liberal scale, upwards of 90,000 qrs. having come to hand since our last monthly notice. The certainty that the duty would recede to the lowest point rendered importers indifferent about selling in the early part of September, still the fall in the value of English had a good deal of influence, and all kinds of foreign were offered 3s. to 4s. per qr. lower on the 4th ult. The duty, as was anticipated, fell on the 21st to 4s. per qr., and since then sellers have become more anxious to realize. Very good qualities of red wheat, weighing 61lbs. to 62lbs. per bush, have lately been offered at 54s. to 55s. per qr. duty paid, and other sorts at proportionate rates, without exciting much attention, and the transactions have, during the last week or two, been on a very restricted scale. The fact is that most of our large millers have imported direct through the agents for the different foreign houses; and being now enabled to clear in for home consumption, they have no occasion to come into the market as purchasers. Unless, therefore, a country demand should spring up, business is likely to remain rather dull for some time to come.

The top price of flour remained stationary up to the 25th; there was previously some talk of putting it down to 50s., but the tendency which the wheat trade afterwards showed to rally caused the millers to hold at 53s. per sack until the day named, when, however, they gave way 3s. per sack. Norfolk households, and similar descriptions, have been offered at from 38s. to 42s., and fine French flour at 42s. to 44s. per sack duty paid. In American comparatively little business has been done, owing to the want of really good fresh qualities.

Hitherto very little new barley has been brought forward, either at the markets in the agricultural districts or at Mark Lane. The quality of the samples as yet exhibited has been coarse and of dark colour, but not wanting in malting properties. The opening price in the London market was 38s. to 40s., and in some parts of the country as much as 42s. to

44s. per qr. was paid for picked lots. These rates appear, however, to have been considered too high by the maltsters, and they refused to follow up their purchases. Quotations have consequently tended downwards, notwithstanding the very moderate nature of the supply. At Mark Lane the fall from the top point has amounted to 5s., sales having lately been made at 34s. to 35s. per qr. Distilling and grinding barley has not receded so much, and though we have had good arrivals from abroad the previous value of good sweet qualities has been nearly supported. The duty on this grain, and on rye, beans, and peas, which is regulated by the barley average, is now 2s. per qr., to which point it fell on the 14th ult.

Malt has throughout the month been taken very cautiously, and the extreme rates current in August have not been maintained. The stocks of old are small, and the best samples of last year's make are not likely to recede much in value.

The stocks of old oats of British growth appear to be all but exhausted, and of the new crop very little has hitherto come to market. The supplies of British corn have, consequently, been so trifling that we have had to depend mainly on foreign, and this will probably continue to be the case for some weeks to come. The receipts from abroad have, however, been on a sufficiently liberal scale to prevent anything like scarcity being experienced, and prices have not undergone any material fluctuations. A fall to the extent of about 1s. per qr. was caused by a large importation of foreign in the beginning of the month, which has since been recovered, and quotations are now much the same as they were at the close of August. Whether the arrivals from abroad will prove fully equal to the demand during the period which must yet elapse before regular supplies of the new crop can be expected, remains to be seen. On the whole we are rather inclined to think that fine old corn will rise a little in value, as there can be no question of its extreme scarcity in all parts of the country. The duty is at the lowest point, 1s. 6d. per qr., but there are no stocks in bond to be liberated, the arrivals from abroad having gone into consumption from time to time as they have come to hand.

The quantity of English beans brought to market has been only moderate, nor have the arrivals from abroad been particularly large; an impression has however, gained ground that the crop of this article is good, and buyers have therefore acted with great caution. Prices have consequently tended downwards, and are now 2s. to 3s. per qr. lower than they were at the close of August.

The value of peas has fluctuated considerably: in the early part of the month a drop of about 8s. on white boilers, and 5s. per qr. on hog peas, occurred; but since then prices have gradually tended upwards, and are not at present more than 4s. for white, and only about 2s. per qr. for maple and grey, lower than at the close of August. Potatoes having recently risen 20s. to 40s. per ton in the London market, an extensive consumption of peas is calculated on, and this may account for the firm manner in which the article has lately been held.

The same circumstance, viz. the rise in potatoes, has also influenced the demand for Indian corn; not that this article is being much used in the metropolis for human food, but we have constant inquiries from Ireland, where it appears to be much better liked than on this side of the channel. The difference between the lowest and highest point at which sales have been effected in floating cargoes of Galatz Indian corn has amounted to about 5s. per qr.—40s. per qr., cost, freight, and insurance, having recently been paid for similar qualities as were at one period sold at 35s. per qr.

The variations in prices in the British markets have had less influence on quotations abroad than in ordinary seasons; which has, no doubt, been caused by the generally reduced state of the stocks of all corn at the principal foreign ports, the very large shipments to this country in 1846 and 1847 having left little on hand. The harvest having, however, turned out well over a large part of continental Europe, in the United States, and in Canada, there will be no lack of grain for exportation when the supplies from the farmers once begin to come forward. In the northern countries of Europe the growers do not in general bring their produce to market until winter has set in; as in the first place they are occupied sowing, and afterwards the roads are rarely in a condition to admit of the transport of heavy loads until hardened by frost and a covering of snow. In America the stocks at the ports on the coast are represented as small, and it is doubtful whether much corn will be got ready before the inland navigation shall have become impeded by ice.

Excepting, therefore, what is now on passage from the Baltic, and what may yet be shipped from the near ports, we cannot calculate on any *large* supplies of wheat of foreign growth till the spring of next year.

The most recent accounts from Danzig inform us that the water in the Vistula was so shallow as to cause that river to be no longer navigable, and unless heavy rain should be experienced the supplies from the interior so long expected would not be able to come down. The quantity of wheat remaining in the warehouses there was exceedingly reduced, and holders of the best high mixed samples had declined selling below 52s. to 54s. per qr. free on board—rates altogether out of proportion to

the value of the same kinds in our markets. The shipments during August had, however, been large, and there were still a good many parcels, previously bought on British account, being dispatched, so that no immediate falling off in the receipts from thence is to expected.

From Rostock, Stralsund, Stettin, &c., comparatively little wheat has been shipped, stocks having for some time past been almost exhausted at those places; the last quotations were nominally 46s. to 48s. per qr. free on board.

At Hamburgh a good deal of business has been done during the month; at one time as much as 54s. per qr. was paid for fine 61lbs. to 62lbs. Upland wheat; afterwards the price fell to about 48s., but latterly it again recovered, and according to the latest advices 50s. to 51s. 6d. per qr. had been paid by English buyers. As this description of wheat is not worth more than 55s. to 56s. per qr., duty paid, in the London market, these purchases are not likely to turn out advantageous.

A good part of the foreign wheat lately received here has been from France and Belgium, and offers continue to be made from those countries, leaving a small margin for profit.

From the Mediterranean ports some quantity of Polish Odessa wheat and Indian corn is likely to arrive, purchases having been made in that quarter during August, on rather an extensive scale; but according to the latest reports prices were too high to tempt our merchants to enter into further operations.

In America the value of flour has at no time given way sufficiently to admit of the execution of the orders sent out from this country; but considerable purchases of Indian corn have no doubt been made there on British account.

The last accounts from New York state that nearly all the Indian corn had been bought up for shipment, at prices varying from 66 to 73 cents per bush. Flour was then held at 6 to 6⅛ d. per brl., and the freight to Liverpool was 3s., and to London 3s. 6d. per brl.

In conclusion, it may not be amiss to notice the singular fact that whilst the summer in Great Britain has been so decidedly a wet one, in other parts the absence of rain has been seriously felt. The cause of the Vistula, and other large rivers having their origin in the Ural mountains, being almost dried up, has, no doubt, been the extreme drought which has prevailed in southern Russia, and advices from the United States, reaching to about the middle of the month, state that scarcely a shower had fallen for a period of six weeks.

CURRENCY PER IMPERIAL MEASURE.

	Shillings per Quarter. OLD.		NEW.	
WHEAT, Essex and Kent, white	55	to 62	48	to 58
Ditto, fine selected runs	—	—	58	60
Ditto, red	50	55	44	53
Ditto, extra	56	58	54	55
Ditto, Talavera	60	64	58	62
Norfolk, Lincolnshire and Yorkshire	48	55	—	—
Ditto, white	48	56	—	—
BARLEY, English, malting and distilling	—	—	30	33
Ditto, Chevalier	—	—	32	34
Ditto, grinding	—	—	28	30
MALT .. Essex, Norfolk and Suffolk	—	—	58	60
Kingston, Ware, and town made	—	—	60	62
OATS, Essex and Suffolk	—	—	21	23
Lincolnshire and Yorkshire (Polands)	—	—	23	26
Ditto, feed	—	—	21	24
Devon & West Country, feed or b ack	—	—	19	20
Northumberland and Scotch, feed	—	—	25	27
Dundalk, Newry, and Belfast, potato	—	—	24	26
Limerick, Sligo, and Westport, potato	—	—	23	25
Ditto, feed	—	—	21	24
Cork, Waterford, Dublin, Youghal, and Clonmel, black	—	—	18	20
Ditto, white	—	—	20	23
Galway	16	20	—	—
RYE	—	—	32	35
FLOUR, best marks (per sack of 280 lbs.)	—	—	45	50
Norfolk and Suffolk, ex-ship	—	—	40	43
BEANS, Mazagan	34	36	—	—
Tick	34	37	—	—
Harrow	36	39	—	—
Pigeon, Heligland	38	40	—	—
Windsor	—	—	—	—
Long pod	—	—	—	—
PEAS, non-boilers	35	38	—	—
White, Essex, and Kent, boilers	40	41	40	42
Ditto, fine Suffolk	42	44	42	44
Maple	38	40	37	40
Hog and grey	37	38	36	38
TARES, winter, per bushel	8	10	—	—
RYE MEAL (per ton)	£7 10s. to £8 0s.			
CAKES, Linseed, English, per 1,000	£11 0s. to £12 0s.			
Ditto, foreign, per ton	£8 0s. to £9 10s.			
Rapeseed	£4 15s. to £5			

IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS.

WEEK ENDING:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.	Rye. s.	d.	Beans. s.	d.	Peas. s.	d.
Aug. 12, 1848..	50	11	30	1	21	8	29	7	36	0	35	2
Aug. 19, 1848..	51	0	30	3	21	5	31	11	37	9	36	3
Aug. 26, 1848..	52	3	31	2	21	11	30	11	38	1	37	7
Sept. 2, 1848..	55	5	32	1	22	6	32	2	38	8	38	11
Sept. 9, 1848..	56	10	33	4	22	10	33	8	39	1	41	6
Sept. 16, 1848..	53	8	33	3	22	2	33	5	38	10	40	2
Aggregate Average of the six weeks which regulates duty	53	4	31	9	22	1	31	11	38	1	38	3
Comparative Average same time last year	57	10	36	5	26	3	34	11	50	6	41	7
DUTIES	4	0	2	0	1	6	2	0	2	0	2	0

HOP MARKET.

BOROUGH, MONDAY, Sept. 25.

More activity is observable in our market, and a fair amount of business in new Hops has been done at the quotations annexed.

Sussex Pockets, 48s. to 50s.
Weald of Kents, 52s. to 60s.
Mid. & East Kents, 56s. to 100s.

The Duty still remains at £205,000.

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.

THE FARMER'S MAGAZINE.

NOVEMBER, 1848.

No. 5.—Vol. XVIII.] [Second Series.

PLATE

SURPLICE; Winner of the Derby, 1848.

PEDIGREE.

Surplice, bred by Lord George Bentinck in 1845, is by Touchstone, out of Crucifix, by Priam, her dam Octaviana, by Octavian—Shuttle—Zara, by Delpini—Flora, by King Fergus.

Touchstone, bred by the late Lord Westminster in 1831, and got by Camel out of Banter, by Master Henry, is too well known both as a race horse and a stud horse to require any repeated detail of his doings here. Sufficient be it to say, Surplice is the third Derby winner out by him; the series having commenced with Cotherstone in 1843, followed by Orlando in the following year. He is also the sire of Mendicant, the Oaks winner of 1846, and of Blue Bonnet, who won the St. Leger in 1842.

Crucifix, bred by Lord Chesterfield 1837, has a fame equal to her illustrious consort for her performances while in work. She has also evinced proportionate promise in the stud, producing, in 1842, as her first foal, that superior race-horse, at two and three years old, Cowl, by Bay Middleton; in 1845, the once first favourite for the Goodwood stake, Crozier, by Lanercost; missed to Sheet Anchor in 1843, and hit the happy cross to Touchstone in 1845.

Surplice is a dark bay horse with very black legs, standing rather more than sixteen hands and an inch high; he has strong muscular quarters, immense thighs, good back, but with rather loose back ribs; deep in the girth, with fine oblique clean shoulders. He has large arms, a rather straight neck, and lean head, with a deep jowl tapering towards the nose. From the height he stands, and the way in which he is furnished throughout, Surplice strikes the spectator at once as a very fine specimen of the power and symmetry possessed by the thorough-bred horse. Like most good ones he is quiet and sluggish in the extreme until once roused, when he is said to show very high courage.

SUMMARY OF SURPLICE'S PERFORMANCES.

In 1847 he started three times, won three times, and received forfeit once:—The Ham Stakes at Goodwood, value clear £2,150; Produce Stakes at Goodwood, £2,100; the Municipal Stakes, at Doncaster, £1,000; the Buckenham Stakes (forfeit) at Newmarket, £250. In 1848 he started seven times and won four times:—The Derby Stakes at Epsom, £5,500; the St. Leger Stakes at Doncaster, £2,975; the North of England Stakes at Doncaster, £750; the Grand Duke Michael Stakes at Newmarket, £1,100—Total, £15,825.

REMARKS ON LAWES' PAPER ON AGRICULTURAL CHEMISTRY—TURNIPS.

BY A FARMER.

Though there are few subjects connected with agricultural chemistry which can be considered as completely settled, yet, thanks to the labours of the scientific men of the present day, there are now some points in this important field of research, which are so far brought out of the gloom which surrounded them no further back than the days of our fathers, that we see some hope of outliving the difficulties at present surrounding us. In this transition state of affairs, any incorrect deductions from agricultural experiments are very much to be deprecated; as they may, by giving a wrong direction to research, materially tend to prevent the perfect explanation of the varied phenomena of nature.

No publication which we have hitherto met comes more under this head, and is on that account more deserving of censure, than the article whose title we have placed at the head of these remarks. So many of the conclusions there laid down for the guidance of practical men are also so contrary to the generally-received opinions, that they must be received with great caution.

The paper purports to be a series of inquiries on the growth of turnips, to ascertain the best manure for that root. To this end they were grown on the same ground for three successive years, with various manures. The deductions are—1st, That superphosphate of lime is a certain and unfailing manure; and 2nd, That though the turnip crop exhaust the land of alkalies, the superphosphate of lime enables the turnip to do without them. In plain English, the farmer has only to purchase plenty of superphosphate of lime of the manufacturer to ensure permanently good turnip crops; so that we have here a very important agricultural question completely set at rest, apparently to Mr. Lawes' ex-

treme satisfaction. We shall therefore inquire, 1st, Whether Mr. Lawes has so conducted the experiments as to obtain this information; and 2nd, Supposing the experiments in this respect to be unexceptionable, whether he has sufficient ground for his conclusions respecting superphosphate of lime.

I. The principal assertion in the paper before us is, "that no advantage was derived from the use of alkaline manures," and that they can be superseded by the superphosphate of lime: in other words, that superphosphate of lime without potash or soda is all that the turnip crop requires. This is a most important question, and bears strongly on the manufacture of manures, which now engages so much attention. Should Mr. Lawes' view of the question be correct, the manufacturers of those articles commit a great folly in purchasing potash for £38, and soda-ash for £12 per ton; as it appears that the addition of these substances does not improve the manure.

In order to ascertain the value of ALKALINE substances as manures, a series of experiments (of which superphosphate of lime was at once the foundation-stone and pinnacle) were tried, and are described as follows (see p. 527):—

Plot 21. 400lbs. of sulphuric acid, and 400lbs. of bone-dust.

Plot 15. 400lbs. of bone-dust, 420lbs. of sulphuric acid, and 315lbs. of soda-ash.

Plot 16. 400lbs. of bone-dust, 420lbs. of sulphuric acid, and 220lbs. of magnesian limestone.

Plot 17. 400lbs. of bone-dust, 420lbs. of sulphuric acid, and 470lbs. of pearlash.

Plot 18. 400lbs. of bone-dust, 105lbs. of soda-ash, 74lbs. of magnesian limestone, and 157lbs. of pearlash.

For the results of these experiments, and most elaborate and laborious tables founded thereon, we refer to the original. Upon the experiments themselves we remark, in the first place, that it is somewhat strange that Mr. Lawes should have arranged such a series of experiments to ascertain the value of *alkaline* manures, when he must (or ought to) know that they contain no *alkaline substances whatever* except No. 18; and mark the difference! they are there tried not with superphosphate of lime, but simply bones. This distinction is an important one, and will be again referred to. To describe each mixture in detail:—No. 21 is superphosphate of lime. No. 15 is a mixture of bone-dust, sulphuric acid, and soda; which would become, according as the mixture was made, either bone earth, sulphate of lime and phosphate of soda, or bone earth and sulphate of soda. No. 16, in like manner, becomes either a mixture of bone earth, sulphate of lime and phosphate of magnesia, or of bone earth and sulphate of magnesia. No. 17, in exactly the same way, becomes a mixture of bone earth, sulphate of lime and phosphate of potash, or a mixture of bone earth and sulphate of potash. In No. 18 no change takes place.

We would particularly direct attention to the drift of this experiment. It professes to be an inquiry respecting the value of alkaline manures, whereas it turns out to be an inquiry whether *the superphosphate of lime can be improved by the addition of alkalies;* and as no improvement of the crop results, they are at once pronounced utterly valueless to agriculture. It has already been shown that no alkalies exist in three of the mixtures: they are converted into salts; and every one, with any knowledge of chemistry, knows that in this form the original properties of the substance are in many cases very much changed, and even completely reversed. Two substances which before chemical combination might be harmless, after that may be poisonous, and *vice versâ.*

Upon the face of the paper the conclusions appear plausible enough, for there the mixtures are given without pointing out the chemical changes which take place; but No. 15, when applied to the soil, does not contain soda-ash, but sulphate or phosphate of soda. The mixture No. 16, in like manner, does not contain magnesian limestone, but sulphate or phosphate of magnesia; and No. 17 does not contain pearlash, but phosphate or sulphate of potash.

Suppose, then, there be no improvement of the crop by the above mixtures, we must conclude—

From No. 15, not that soda is of no value to the crop, but that phosphate or sulphate of soda either may not be useful, or may not be presented to the plant in a form fit for assimilation.

From No. 16 we conclude, in like manner, not that magnesia is useless to the turnip crop; but that phosphate or sulphate of magnesia either may not be useful, or may not be presented to the plant in a form fit for assimilation.

And in like manner respecting potash in No. 17.

Having so often to refer to the superphosphate of lime, it may not be uninteresting to describe the peculiar chemical action which takes place when bones and sulphuric acid are brought into contact. Bones are generally supposed to owe their fertilizing powers principally to the phosphoric acid they contain. This acid, when in combination with lime (as it is in the bones), is quite insoluble in water; and when they are applied to the soil in the old fashion, they give up the phosphoric acid with

great slowness: if the pieces are any size, they will remain unaltered for many years. Liebig suggested that, previous to the bones being used as a manure, they should be treated with sulphuric acid. This acid takes part of the lime from the phosphoric acid, so that the mixture becomes (instead of bones) phosphate of lime, free *phosphoric acid*, and sulphate of lime; or, as it is commonly called, superphosphate of lime. The free phosphoric acid is quite soluble in water, so that it is ready for immediate absorption by the plant. This is the entire secret.

To again recur to the experiments:

No. 21, with which *they are all compared*, contains this free phosphoric acid.

No. 15 contains, instead of this acid, phosphate of soda.

No. 16 contains phosphate of magnesia (*which is quite as insoluble as the bones*).

No. 17 contains phosphate of potash. And

No. 18 contains the insoluble bone earth, with a mixture of alkalies, &c.

As it is known that all the inorganic food of plants must be soluble to be of service to vegetation, we at once see how superior in this respect No. 21 is to all the others in this most important vegetative power: and yet all the rest are compared with it, and by that comparison the question is decided. The experiment then, in this state, does not try, much less decide, the value of the alkalies as manures; it only tries whether the free phosphoric acid of the prepared bones, or the comparatively soluble phosphates of soda and potash, or the insoluble phosphate of magnesia, be the proper form to supply the phosphoric acid to the turnip crop.

Respecting experiment No. 18, which consists of a mixture of bones, soda, &c., it was not to be expected that bones in the unprepared state would prove so valuable as the superphosphate of lime of No. 21; so that there is no honest ground for comparison. And as in No. 18 the bones are jumbled up with the alkalies, nothing is decided except that the mixture is bad; though this does not justify us in drawing conclusions respecting the individual parts of the mixture.

We think that enough has been advanced to show that Mr. Lawes has failed most signally in arranging his experiments so as to derive information respecting alkaline manures. We must next inquire if, even by his own showing, he is justified in concluding that no advantage was derived from their use?

In p. 517 there is given the weight of bulbs per acre produced by each manure, from which we make the following extracts:

No.	Tons.	cwt.	q.	lb.
15. 400lbs. of bone-dust, 420lbs. of sulphuric acid, and 315lbs. of soda-ash, produce . . .	11	15	3	12
16. 400lbs. of bone-dust, 420lbs. of sulphuric acid, and 220lbs. of magnesian limestone, produce .	12	1	0	0
17. 400lbs. of bone-dust, 420lbs. of sulphuric acid, and 470lbs. of pearlash, produce . . .	10	19	0	6
18. 400lbs. of bone-dust, 105lbs. of soda-ash, 74lbs. of magnesian limestone, and 157lbs. of pearlash, produce	12	12	2	8
22. 1,232lbs. of superphosphate produce	12	13	3	12

Considerably more might have been extracted, but the above is enough for our present purpose; and attention is to be directed to the following facts:

No.	Tons.	cwt.
22, from 240lbs. of phosphoric acid, produced	12	13
15, from 150lbs. ditto, produced ..	11	15
16, from 150lbs. ditto, produced ..	12	1
17, from 150lbs. ditto, produced ..	10	19
18, from 150lbs. ditto, produced ..	12	12

Showing that No. 22, with which they were all compared, contained not less than 90lbs. of phosphoric acid more than any of the others. This extra phosphoric acid is sufficient *for about 45 tons of turnips;* and yet, even when presented in the most favourable form as superphosphate, it only produces *one cwt. more than No. 18, where it was insoluble, and the alkalies had been added;* and about half a ton more than No. 16, where magnesia had been added. The soda gives a deficiency of 18 cwt., and the potash 1 ton 14 cwt.

To test the whole by the cost of the applications, a point in which Mr. Lawes has left us strangely deficient, we find—

No.		tons	cwt.	£	s.	d.	
15	produces	11	15	at 3	5	0	=5s. per ton.
16	„	12	1	at 1	17	0	=3s. „
17	„	10	19	at 7	15	0	=14s. „
18	„	12	12	at 3	2	0	=5s. „
22	„	12	13	at 3	17	0	=6s. „

This calculation gives quite a different view of the whole matter. It is evident from No. 16 that the addition of 220lbs of magnesian limestone enables the farmer *to produce his turnips at 3s. per ton*, or exactly half the price of those produced by the superphosphate of lime; indeed, except the potash, the whole of the mixtures are *cheaper turnip producers than the superphosphate*. How does the argument look now, with regard to the non-utility of

alkaline manures? To us the evident inference is that magnesia improves the superphosphate of lime; so that the whole matter rests upon the potash. We have already shown that the mixture containing it is 90lbs. of phosphoric acid poorer than No. 22, and it must be especially observed that a greater weight of this (the most expensive part of the mixtures) is used in No. 17 than in any of the others; and before deciding absolutely on the value of potash, a mixture should be tried, containing as much of that substance as would bring the cost down to that of the others. When that has been done, we may decide on the value of potash as a manure.

But lest it should be thought that we are making too much of the view of the question which we have advocated, it may not be amiss to cite some authorities on the question. No opinion can have more weight than Liebig's, and fortunately he has expressed himself very pointedly. He says—

"It is obvious that the object of culture, viz., a maximum of produce, cannot be obtained unless the alkalies necessary for the transformation of carbonic acid into starch and sugar are supplied in abundant quantity." Also—"It cannot be supposed that blood will be formed in the body of any animal, or milk in that of the cow, if their food fail in even one of the constituents necessary for the sustenance of the vital functions. The compounds containing nitrogen and sulphur, as well as the *alkalies* and phosphates, are constituents of the blood; but the conversion of the former into blood cannot be conceived without the presence and co-operation of the latter. According to this view, the power of any part of a plant to support the life of an animal, and to increase its blood and flesh, is in exact proportion to its amount of the organic constituents of the blood and of the materials necessary for their conversion into blood, viz., *alkalies*, phosphates, and chlorides. But, independently of these views, a rational farmer must act exactly as if the presence of the inorganic constituents of the blood (the *alkalies* and phosphates) were indispensable for the production of the organic constituents. If he is desirous of making his land yield a maximum of blood and flesh, he must furnish to it *in abundant quantity* those constituents which the atmosphere cannot yield"—viz., the alkalies, phosphates, &c.

These remarks are so very *apropos*, that they can only be weakened by comment. It is evidently Liebig's opinion that the alkalies are as indispensable to the growth of vegetables as the other inorganic ingredients which have been discovered in their ashes.

The experiments of Alex. J. Main are remarkable, as having conducted that gentleman to exactly the opposite conclusion that Mr. Lawes has arrived at. Mr. Main obtained the best crops of turnips by sulphate of soda and saltpetre refuse, and lauds them, very justly according to his experiments, as superior to most of the other inorganic manures.

Gasparin, in his *Cours d'Agriculture*, has also very strongly urged upon farmers the necessity of furnishing their crops with a supply of the alkalies, and points to the rich soils which are derived from granite as a proof of their importance to vegetation.*

To quote one more authority, we make the following extracts from a valuable paper by Moffat, read before the Newcastle-upon-Tyne Farmers' Club. The writer places side by side the quantity of mineral matters in an acre of soil, 24 tons of turnips, 15 tons of farm dung, and 4 cwt. of guano.

	24 tons of turnips	An acre of soil.	15 tons farm yard dung.	4 cwt. of guano.
	lbs.		lbs.	lbs.
Silica	13.2	550 tons	2473.4	7.02
Phos. acid ..	45.6	439 lbs.	108.19	67.14
Sulph. acid..	60.24	trace	58.0	16.38
Lime	90.24	5.2 tons	214.0	53.87
Magnesia ..	14.6	560 lbs.	17.36	3.6
Peroxide of iron	4.32	2.9 tons	29.76	—
Potash.....	147.41	trace	103.0	20.11
Soda	59.87	trace	48.8	0.25
Chlorine	35.53	trace	22.63	7.85
Total....	470.57		3075.14	176.24

"Now it will be observed from this table that the turnip is a plant which draws a large amount of mineral matters from the soil or manure; that the soil is essentially deficient in four very important agents, viz., *potash*, *soda*, sulphuric acid, and chlorine;" but that the farm-yard manure is especially rich in those matters, and therefore qualified to give abundant crops of turnips. "But not so the guano; in it we notice a large deficiency of all those constituents which constitute the perfection of farm-yard dung for turnips."...."To what an inconsiderable extent, then, guano is capable of counteracting the poverty of such a soil will be sufficiently apparent, as the very constituents of which the soil is most in want, exist also in least abundance in guano." The writer also proceeds to show that (as Liebig has intimated in the extracts we have made from his works) the turnips grown from guano are much inferior in feeding power to those grown by farm-yard dung. "It is my opinion," continues the writer, "that if successive crops of turnips be raised from guano or bones alone, upon poor lands, and be drawn off the soil to be consumed elsewhere, such soils will

* *Cours d'Agriculture*, vol. i.

become so exhausted of the alkalies, that they will eventually refuse to produce any crop whatever." The soil whose constitution is given above has been subject to this sort of cultivation, and the chemical analysis bears out the inferences which have been drawn respecting the impoverishment of the soil by the use of guano. It must be admitted that this impoverishment will be materially hastened or delayed by the quantity of the turnip crop which is removed from the soil. We wish to show, by the previous remarks, that there are soils which are so poor in the alkalies requisite to produce turnips, that a good crop cannot be produced unless potash be supplied by manures. That this supply cannot be adequately kept up by the use of guano, is evident from the previous extracts; and that it cannot be done by the superphosphate of lime, must be equally evident when it is stated that it does not contain any potash, and but small quantities of soda.

The whole of the remarks by the author of this paper are so much to the point on the question we are discussing, that, thinking they would be received as better evidence than any assertion of ours, we have taken the liberty of making rather lengthy extracts from it.

The proper and *early* solution of this question respecting alkaline manures is of more importance than may appear at first sight. Since Liebig first suggested the application of sulphuric acid to agricultural purposes, the use of it has gradually extended, and become of such importance as to promise to open a large market to the manufacturers of that article. In many parts of the country the farmers now prepare the bones themselves. Most strongly would we urge upon them to add to the prepared bones the following substances, as recommended by Moffat in the paper already quoted.

"To the usual quantity of bones, add 1 cwt. of pearl-ash, 4 stones of Epsom salts (sulphate magnesia), 3 cwt. of common salt."

This is especially to be attended to, when a sufficient quantity of farm-yard manure cannot be obtained; nor must the farmer deceive himself by the present abundant crops which he may be able to grow, as the permanent use of any manure, be it superphosphate of lime or any other manure which does not contain all the inorganic constituents of the plants, must end in deficient crops. In this view the question assumes a very important feature in agriculture, and any error in the application of manures is a loss not only to the farmer, but to the community.

The above is unfortunately not the only fault we are disposed to find with the paper before us. It is bad enough when wrong conclusions from the experiments are laid down as rules for the farmer's guidance, but it is still more intolerable when agricultural chemistry is mystified by remarks which rival the writings of the alchymists in obscurity: one or two quotations will be enough, and happy indeed do we esteem the farmer who can extract information from them: the following for instance, "The more the nitrogenous condition of manuring prevails over the carbonaceous, the more will *vascularity* and the less will *special* deposition be enhanced." Speaking about the change which takes place in the green parts of the turnip during the process of drying for analysis, he says "that where an active circulation is still proceeding, there will be found not only the *actual and fixed*, but also the *prospectively possible* constituents, the latter as yet only in a *vehicular condition*." The latter expression completely baffles our limited comprehension. In another place chlorine gas is described as a *vehicular* element, though to what property the gas is indebted for this mysterious title we are at a loss to understand.

As if to crown the whole matter, and to disprove all that had previously been asserted, Mr. Lawes himself admits that the first application of a mineral phosphate is liable to produce heavier crops than those which follow, and attributes this falling off to the exhaustion of the organic matter of the soil, and recommends rapecake as a remedy. In answer to this, it must be remembered that rapecake is a very compound substance, and contains large quantities of the *alkali* ammonia, as well as other soluble salts, besides the carbonaceous matters.

To conclude, it is somewhat lamentable that the paper which has called forth the previous remarks occupies nearly one-fourth of the last publication of the transactions of one of the leading agricultural societies of the world. We are sorry for such a misapplication of valuable space; we are sorry for the wasted labour Mr. Lawes has bestowed on his elaborate tables, as we are perfectly satisfied that, though our remarks may fail to be convincing, a few years will set the matter at rest, and show which is the correct view; and, lastly, we are sorry for our brother farmers, who are, in the nineteenth century, provided with such worthless scientific information.

T. L. C.

THE FORMATION OF ALLUVIAL SOILS.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

The richest alluvial soils are formed by natural causes, in a manner which it is more often in our power to imitate than is commonly supposed. And in thus taking a hint from Nature's great operations, we possess the advantage of studying under a tutor, whose precepts rest on the most solid of all foundations—the laws of God.

In searching for the richest soils of the old and the new worlds, we shall find these almost always situated in the bottoms of valleys, by the banks of rivers, and in other low-lying situations. When we proceed to examine the cause of this, we find, in the action of the flood or upland stream waters, a ready explanation of this universal state of things. In these waters, at almost all seasons of the year, a mass of mechanically suspended matters are found. Finely divided earths—masses of organic matters—are thus carried along by the moving waters. It is true that the amount of them varies with the character of the countries through which these rivers pursue their course, and the rapidity of the stream; but all more or less contain a large proportion of matters which, hurried along by the force of the current, are deposited as soon as the strength of the stream is diminished, or ceases, by the overflowings of its ordinary banks, or in the depths of the sea. By such means the rich soils of the cultivated alluvial fields of the farmer were first formed, are still enriched, and are still at the mouths of rivers, gradually forming or enlarging the deltas, alike proverbial for their fertility; such as those at the mouths of the Thames, the Rhine, the Nile, the Oronoco, the Mississippi, or the Ganges. It may not be unattended with some little advantage to the advancement of practical agriculture, if in this little essay I again endeavour to keep alive a spirit of inquiry as to the practicability of profitably imitating, by artificial means, these grand natural operations of the moving waters of the earth.

It is well known that in certain English localities the farmer has, by the *warping* system, formed rich alluvial land, in places where only bogs and worthless soils were before in existence. It is not merely, however, to these that I would direct my observations. I would cautiously, yet confidently, approach in many districts, and examine this question:—"How far can the adjoining muddy waters be profitably raised by artificial means, for the purposes of irrigation and warping?"

It is a very practical argument, of which in the first instance to remind the farmer who may be startled with such a question, that the same powerful agents that drain the great fen districts of England can as readily raise the same enormous amount of water *on to* the land that the great Lincolnshire steam-engines remove from it—the same amount of water which *drains* so many thousands of acres of land, would irrigate, as copiously, the same extent of land. It is evident that in those situations where water, containing a large proportion of mechanically-suspended earths and decomposing organic matters, can be employed—that there the two-fold object may be attained, of feeding irrigated meads, while an alluvial soil is gradually formed by the deposit from the water. On a considerable scale this has been accomplished, in the formation of the rich meads near the city of Edinburgh, irrigated by the contents of the sewers; and, to a still greater extent, the very same process has been successfully carried on in some of the districts surrounding the Humber without the aid of the pump.

The rapidity with which these soils are formed, is of course proportionate to the impurity of the water. In the case of the warping system, as followed on the shores of the Humber, Mr. Ralph Creyke (*Jour. R. A. S.*, vol. 5, p. 402) remarks, that "in one spring, numbering perhaps 10 or 12 tides, as much as from 10 to 15 acres have been known to have been warped the thickness of from one to three feet." If a similar plan could be adopted in the case of the waters of the Thames, the deposit of its mud would be certainly rapid. In the instance, too, of the sewer waters of London, a large proportion of rich insoluble substances are suspended. From a gallon of one of these (the King's Scholars Pond sewer), examined by Professors Braude and Cooper (*Rep. of Metro. Sew.*, 153), was deposited, by subsidence, 55 grains: of this—21.22 grains were combustible, and consisted of animal matter rich in nitrogen, some vegetable matter, and a quantity of fat; and 33.75 grains of matter, consisting of—

	Grains.
Phosphate of lime	6.81
Oxide of iron	2.01
Carbonate of lime	1.75
Sulphate of lime	1.53
Earthy matter and sand	21.65

The importance of adopting this mode of forming a soil long since attracted the attention of Arthur

Young. He noted the Lincolnshire system of warping (*Annals of Agri.*, vol. 33, p. 383) as a most singular improvement. His account of the process employed there will serve as an instruction for those who in other districts may wish to accomplish similar improvements. The water of the tides, he says, that come up the Trent, Ouse, Don, and other rivers, which empty themselves into the great estuary of the Humber, is muddy to an excess; insomuch that in summer, if a cylindrical glass, 12 or 15 inches long, be filled with it, it will presently deposit an inch, and sometimes more, of what is called warp. The improvement is perfectly simple, and consists in nothing more than letting in the tide at high water to deposit the warp, and permitting it to run off again as the tide falls; so that, as he adds, it is not to manure the soil that is the object, but to create it. It therefore follows, that it is not of much consequence what the soil is that is intended to be warped, "a bog, clay, sand, peat, or a barn-floor are all one, as the warp raises it in one summer from six to sixteen inches, and in hollows and low places two, three, or four feet, so as to leave the whole level."

The system of warping, still carried on in Lincolnshire, Mr. R. Creyke (*Jour. R.A.S.*, vol. 5, p. 401) thinks originated about 80 years since, and that it was commenced in a very small way, the *sluices* or *cloughs* used then being merely what now would be called *shuttles;* and the deposit at first was very small, from want of power consequent on the works being so small; gradually, however, the benefit became more generally known, and the works were made larger. In 1821, Ralph Creyke, Esq. (having gained considerable experience in improving a certain quantity of his own land), entered into an agreement with certain proprietors of land in the townships of Goole, Swinefleet, and Reedness, for the purpose of warping their land. An Act of Parliament was obtained; and he commenced excavating a large main drain to convey the tide-water from the river Ouse, through the old cultivated land, to the barren and uncultivated morass about to be improved. The sluice or clough was built of stone, with two openings of 16 feet each in width, and 19 feet in height from the sole to the crown of the arch, with four substantial doors, made, when shut, to oppose the entrance of the tide, yet with power at will to keep them open for the admission of the tide during the time of warping, by means of strong staples and iron rods fixed in the stone-work. The main drain was very large, in having been proved, by continued observation and calculation, that the area of a warping-drain ought to be three times that of the sluice, to prevent as much as possible any considerable resistance to the flow of the water; its dimensions were 30 feet wide at the bottom, 90 feet wide at the surface of the land, and 11½ deep; the banks were placed 9 feet from the edge of the main drain, the base of each bank was 60 feet wide, and they were 10 feet high; this main drain extended originally for near three miles, and cost, with the purchase of land and erection of sluice, about £18,000. The main drain and its extension is now, and has been, used as a canal for vessels of about 75 or 80 tons burthen; and has been found very convenient for the purpose of conveying one of the chief productions of the warp-land—namely, potatoes—to the London market (where they command a high price, under the name of Yorkshire reds), bringing in return manure, an immense quantity of which is used in the cultivation of potatoes, and is chiefly brought from Hull and London.

The progress of the steady subsidence which takes place when such impure waters are passed slowly over the land was examined by Mr. James Smith (Evidence before the Metro. Sewage Company, p. 10). He examined the state of the water of the Edinburgh sewers, during a course of two miles, in six different places. The first specimen taken from the mouth of a sewer was found to contain, per gallon, 244 grains of solid matter in suspension, and 82 grains in solution. There were found in the second specimen 52 grains in suspension, and 87 in solution. In the third specimen there were 31 grains in suspension, and 89 grains in solution. In the fourth specimen 15 grains in suspension, and 82 grains in solution. In the fifth specimen, 2½ grains; and in the sixth experiment, which was on very sharp sandy land near to the sea-shore, just before the water was allowed to run away, having passed over all the meadows, only 2 grains of matter in suspension and 72 grains in solution. By the deposits from these sewers has gradually accumulated that rich soil which now forms the celebrated sewer-watered Edinburgh meads, so often referred to by the advocates of irrigation. The owners of these had, it seems, to encounter the most unpromising of all soils, their substratum being in some instances nothing but a bed of shingle thrown up by the waves of the Frith of Forth. In referring to these facts, the next great object is to endeavour to promote their application to other localities, and to this end we may remember that the deposit of solid matter from even small streams is very considerable. For instance, in the case of the water of the small river Maun, which flows from Mansfield, and has produced such remarkably good results in the Duke of Portland's water meadows at Clipstone Park, Mr. J. E. Denison observes (*ibid*, vol. i., p. 362)—"It will sometimes deposit a sediment in one watering of the thickness of a sheet of paper."

A plan has recently been submitted to the members of the sanitary commission of inquiry for accomplishing the drainage of Southwark, by pumping the contents of its sewers into the Thames by means of steam-engines. This is rendered necessary in the case of Southwark, from the sewers being placed below the level of high-water. This suggests another source from whence soils might be created and water meads of the most valuable description formed, not only by the use of the steam-engine in cases of the imperfect sewerage of towns and other populous places, but even by the use of the foul waters of rivers for a similar purpose. Machinery is commonly used in oriental countries for the irrigation of their thirsty soils, although, unlike the able and enterprising farmers of this country, they are unaided by the steam-engine. The quantity of water required for irrigation is certainly large. In the case of a calcareous sand I calculate it would require for one flooding or complete saturation of the soil with water to the depth of one foot about 112,000 gallons per acre, taking in this calculation for our data the experiments of Professor Schubler on the weight of a cubic foot of different soils, fully dried at 144½ degrees, and the weight of the same sorts thoroughly saturated with water. The weight of these in pounds he found to be as follows (*Jour. R. A. S.*, vol. i., p. 180) :—

	Wet.	Dry.
Calcareous sand	113.6	141.3
Siliceous sand.....	111.3	136.1
Sandy clay	97.8	129.7
Loamy clay.....	88.5	124.1
Garden mould.....	68.7	102.7
Arable soil	84.5	119.1

These investigations are not only important in themselves, but they, in all reasonable probability, will conduce to the advantage of the cultivator in many suitable localities. It may lead to the profitable conclusion that the use of the waters of our rivers has never yet extended in the service of agriculture nearly so far and so profitably as it is capable; and that, in this respect, other nations have in some rude form or other set us an example which we might in many instances do well to follow.

ADULTERATION OF FOOD.

BY J. TOWERS, MEMBER R.A.S., H.S. OF LONDON.

This is a subject that has been long agitated. Some years have elapsed since a chemist named Frederick Accum, if I mistake not, took it up in a way of extravagant minuteness that by some was thought to approach to the burlesque. It shortly after passed into neglect: the public became indifferent to it, and were contented to go on—*à l'ordinaire*—in supine confidence.

An article is now before me, in the *Pharmaceutical Times* of Sept. 30. It is said to be taken from "Mitchell's Falsification of Food," and contains matter of such grave moment, that I should hold myself almost criminal were I not to communicate it to the public, through the medium of these columns, without loss of time. On the subject of bakers' bread nothing more requires to be stated than what is generally known, and, indeed, acknowledged by some of them, who assert that the public taste requires the bread to be made as "*light*" in texture and colour as possible. To this vitiated "taste" the general consumer is willing to abandon flavour, salubrity, and durability. So be it. Fashion rules! Otherwise—as the domestic cottage-economist well knows—true, sound bread ought to contain all the *pollard* of the grain, and to be made up without one particle of otato, gypsum, or alum. Even those public bakers who prepare what they call "home-made bread"—and many there are now that do so—assert that they omit all those matters (called "stuff") that enter into the composition of the ordinary loaves. But enough of this, for which there is ample cause for amendment.

It is said that several instances have come under notice, in which Gloucester cheese has been contaminated with *red lead*. "In one poisonous sample, which fell to my" (the writer's) "lot to investigate, the evil had been caused by the sophistication of the annatto employed for colouring the cheese."

As a striking example of the extent to which adulterated articles may be diffused, and of the means by which the fraud was traced to its source, we cite the following case:—A gentleman, who had occasion to reside for some time in a city in the west of England, was one night seized with a distressing but indescribable pain in the region of the stomach and abdomen, accompanied with a feeling of tension which occasioned much restlessness, anxiety, and repugnance to food. He apprehended inflammation, but in twenty-four hours the symptoms subsided. Four days afterwards he had a

similar attack. He then recollected that on both occasions he had ordered a plate of toasted cheese, of which he had partaken heartily—a dish which, when at home, regularly served him for supper. The mistress of the inn expressed great surprise, as the cheese had been purchased at a highly respectable shop in London. The gentleman then ascribed the attacks to some peculiar constitutional cause; but having, after the lapse of a few days, again partaken of the same cheese, a violent colic seized him, which lasted the whole night and part of the ensuing day. The cheese was examined by a chemist in the vicinity, who pronounced it to be contaminated with *lead!* In the mean time, however, the suspected cheese "had been served up for several other customers;" but we are not told that any further mischief had resulted, other than a degree of sickness which a servant of the establishment said had been produced on a kitten which had eaten the rind cut off the gentleman's cheese. This impunity so far as respects the majority would throw doubt upon the whole statement, were it not for the evidence obtained by application to the London dealer, and, through him, to the farmer who made the cheese. "He (the latter) declared that he had bought the annatto of a traveller who had supplied him and his neighbours for years with it, without a single complaint. On subsequent inquiry through a circuitous channel, it was found that, as the supplies of annatto had been deficient and of inferior quality, recourse had been had to *vermillion* as an expedient. Even this admixture could not be considered deleterious. (?) But on further application to the druggist who sold the article, the answer was, that the *vermillion* had been *mixed with a portion of red lead*, as frequently practised, on the supposition that the vermillion would be used only for house-painting. Thus the druggist sold his vermillion, in the *regular way of trade*, adulterated with red lead, to increase his profit, without any suspicion of the use to which it would be applied; and the purchaser who adulterated the annatto, presuming that the vermillion was genuine, had no hesitation in heightening the colour of his spurious annatto with so *harmless* an adjunct.

All adulteration is a crime. This abstract truth ought to be held as a sacred principle. But in articles of food, the very thought of it is repugnant. Were it not for this conviction, the mere recital of the effects produced by the Gloucester cheese might be almost treated as a fable. In a city of the west of England, *at a public inn*, a poisoned cheese is cut, and, we may fairly presume, is served out indiscriminately to all its inmates, till at length "the cook was directed henceforth not to serve up any toasted cheese." Yet we are seriously told that one gentleman and a kitten are the only sufferers from an aliment contaminated by the red oxide of lead. Be this as it may, the moral, so far as adulteration is concerned, remains in full force. But, forsooth! the preparer of the annatto had no scruple to heighten the colour of his spurious article with an adjunct so *harmless* as vermillion! This colouring matter is a natural, or artificially-prepared, combination of mercury with sulphur, in the proportion of two equivalents of the latter with one of the former; hence, chemically it is a bi-sulphuret of mercury. It may not be actively poisonous of itself, the sulphur obtunding the metal; but who shall or dare assert that in the human stomach and intestines it would remain inert in all cases, exposed as it must be to organic acids under the agency of the vital principle, and subject to the infinite variations of temperament! But *red lead* is added by the dealer in vermillion; and this now certain poison is mixed with the annatto to give richness of tint! Truly we live in perilous times, when our bread and cheese are degraded and contaminated merely to please the eye.

And here I would put the plain question, *why* is cheese coloured? For *what reason* do we introduce a foreign *dye* into the curd of milk, to confer colour; which, if it produce any effect at all, degrades the flavour, and incurs the risk—as we have seen—of its being rendered positively unwholesome by the addition of noxious ingredients? In further evidence of this, the paper in question adds: "I have *frequently* examined specimens of annatto which have been contaminated with red lead, or a mixture of red lead and ochre; so that any cheese which might have been coloured by such annatto would be decidedly poisonous. I have only met with cheese that contained red lead on one occasion, although it may be comparatively common, as the matter with which it is coloured is very often adulterated with red lead."

Under every view of the subject, the plain question arises, *why* and for what good purpose do the manufacturers of cheese and butter introduce colour? and why does the public authorize a practice so utterly useless and dangerous? What is annatto, or, more properly, "arnatto"? Let the following extract from the *Penny Cyclopædia* (where also there is a pretty cut, with referential figures, of the plant and its seeds) answer the question:—"*Bixa orellana* (a West Indian plant): a small tree, with deep-green, shining, heart-shaped leaves, and clusters of purplish flowers, which are succeeded by capsules of a heart-shaped form, covered with stiffish bristles, and opening into two valves, that contain, attached to their middle, a number of seeds covered with a soft, sticky, vermillion-coloured rind. It is the latter which furnishes the arnatto

of commerce. According to Fée, this substance is obtained by heaping up the seeds in water for several weeks or months, and afterwards pressing them, when the colouring matter separates, and is afterwards precipitated in the water. Or the pulp is separated by washing and maceration, and the colouring matter is precipitated by the aid of an acid, and caught upon fine sieves."

Annatto so prepared is made up in balls or cakes of two or three pounds' weight, and thus comes to our market. The colouring matter dissolves in water, but more freely in spirit of wine and alkaline fluids. In consequence of the process of maceration, it acquires a disagreeable and more or less fetid smell, and a bad taste. Good cheese requires no colour, neither does well-churned and thoroughly well-made-up butter. The flavour obtained from the dye—for such it is—is anything but good or desirable. Let any one compare the *pale* and *coloured* Chedder and Cheshire cheeses of the best dairies, and then frankly decide. The Americans—now that they have improved their processes, and in many instances have brought their cheeses to compete with those of Stilton—begin to mar them with colour. Alas for English taste! Must fashion so rule, as to open a door for the introduction of poisonous ingredients into the fetid dyes employed in the manufacture of the lower-priced commodities? The false taste of the rich may merit some practical reproof; but the honest citizen and industrious labourer ought not to be made the victims of a silly fashion, which possesses no one single advantage to plead in its justification.

Oct. 12.

ON SMUT IN WHEAT.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—As many farmers will now be about to commence the sowing of their winter wheat, it may be a matter of no small importance to them to be informed of the various methods practised by many leading agriculturists for the prevention of smut; and as several letters have lately appeared in the newspapers in reference to this matter, some recommending one system, and some another, but all methods attended with more or less expense, permit me, through the medium of your excellent journal, to communicate the experience I have had in regard to this subject, which I have seen practised for several years, and, though attended with *no expense*, proved nevertheless completely effectual in the prevention of smut.

While I studied agriculture practically, some years ago, with Mr. Jobson, Chillingham, Newtown, one of the leading agriculturists in Northumberland, the method pursued by that gentleman in pickling his seed wheat was simply this: on that extensive arable farm, comprehending upwards of 1,400 acres, lived 14 or 15 cottagers, or hinds as they are called in that county, each having a house of his own, and all built in the neighbourhood of the farm steading. When it was proposed to sow 10 or 15 acres of wheat, these hinds were requested to retain the *chamber-ley* made over night, and to empty it into vessels placed at their doors in the morning. This (probably 12 or 15 gallons) was brought to the engine-house, which had a flagged floor, and was essential for the purpose; about 10 or 11 gallons were poured into a large tub, and afterwards about a bushel of wheat, and the whole stirred round several times with a short stick; then the tub was lifted up by two men, and the light wheat and smut balls, if any, floating on the surface, was carefully run off into a riddle, on the bottom of which was sewed a piece of thin gauze cloth; this riddle was supported by two sticks laid across the mouth of an empty tub, the same size as the first, and the liquid running through, left the refuse, which was thrown aside, and carefully prevented from mixing with the sound wheat; a large willow basket was then placed on these sticks, and the whole contents of the first tub emptied into it, and after allowing it to remain for a minute or two, till the liquid had escaped, then the basket was emptied on the floor, and a shovelfull of powdered hot lime sifted over it, and afterwards turned over three or four times, or until it was observed that every ear of grain had taken on a coating of lime. This process was continued until the quantity for a day's sowing was completed, after which the whole was put into sacks. If the pickled wheat was sown by the hand, the lime was sometimes troublesome for the eyes, but a thin gauze veil over the face prevented any injury.

This method proved perfectly effectual, as I shall presently state, and, except for the lime used, *cost no expense whatever*, as the hinds were, of course, yearly servants, and as we generally commenced the pickling process during the seed season about

four o'clock in the morning, the whole for a day's sowing was completed by seven o'clock, and therefore no part of the servants' time was occupied which should have been employed on the farm.

Though Mr. Jobson invariably practised this system, and occasionally invited the country gentlemen and farmers to inspect his fields of wheat immediately before harvest, yet many of them still remained sceptical about the chamber-ley and lime being a good pickle, and insisting that vitriol and water, or copperas and water, was better; that gentleman, in order to test the superiority of his system (practised at that time only by himself), caused several young men who were learning farming, as well as myself, to try various experiments; accordingly we procured eight samples of sound wheat, each about what we could hold in our two hands, and after having found a few smut balls, we proceeded as follows—

The 1st sample was sown without any preparation.

2nd do., rubbed completely with the smut balls between our hands till every ear was black, and afterwards pickled with strong chamber-ley and lime.

3rd do., also rubbed completely with the smut balls as above, and then sown without any preparation.

4th do., pickled with chamber-ley and lime in the usual manner.

5th do., pickled with blue vitriol dissolved in water.

6th do., pickled with copperas dissolved in water.

7th do., rubbed with smut balls, and afterwards pickled with blue vitriol and water.

8th do., rubbed also with the balls, and then pickled with copperas and water.

The whole was carefully sown in the first week of November, in beds, each of about 14 or 15 feet in length, and about 8 or 9 in breadth, and the utmost care taken during the following year to mark the result, which is as follows—

The first was all but completely free of smut, only one or two balls found.

2nd.—About one-third of this was smut and two-thirds good.

3rd.—Nearly one-half of this sample was smut; almost every head was more or less affected.

4th.—Completely *free of smut*, and the whole was good.

5th.—Nearly free of smut, only two or three balls being found.

6th.—Almost the same in every respect as No. 5.

7th.—Fully one-half of this sample was smut, though it was evident the vitriol and water had had great effect in counteracting the rubbing of the sound ears.

8th.—Nearly the same as No. 7, though it appeared that, on the whole, the copperas and water was scarcely so effective as the vitriol and water; and where chamber-ley cannot be conveniently got in quantities, I would recommend from these experiments the vitriol and water in preference to the copperas and water for a good pickle for the prevention of smut.

These experiments were so completely satisfactory to Mr. Jobson's mind, proving that the chamberley and lime was *decidedly the best*, that he published a long detailed account of the whole in the London *Farmers' Journal*.

Every farmer having wheat to sow should be careful to put it through a good pickle before depositing the seed in the ground, as it is proved by these experiments that the smut balls adulterate the sound ears, and when thrashed with the crop tend not only to darken its colour, but very much deteriorate its value for the market.

The solution of copperas or vitriol, or even of salt properly diluted, may make a satisfactory pickle, if carefully gone about, and may prove tolerably effective, but still these ingredients cost some expense if the quantity of seed to pickle is considerable; whereas the method I have pointed out, of using chamber-ley (and if two or three days old the better) and lime, will be found superior to any of these, and *cost nothing*, as the chamber-ley may be procured on the farm, or at all events from the nearest village that may be in the neighbourhood.

Many of your readers, no doubt, are extensive growers of wheat, and as some of them possibly may not yet be completed with the sowing, I should be delighted to hear that these experiments were tried this season in the manner I have pointed out. The process is simple, and attended with little or no trouble.

I am, sir, &c.,

Glasgow, Oct. 25. J. D. F.

SMUT IN WHEAT.

Sir,—As so many specifics are recommended for prevention of smut in wheat, it seems that it prevails to a considerable extent, and that the steeps and dressings of the seed have not eradicated the disease. Dipping and skimming the seed is the only sure mode of equally wetting the whole. Vitriol is troublesome to use, requiring water to be boiling hot. Brined seed stick in the drill cups in moist weather, and the most efficacious dressing is arsenic. It is the least cost, least trouble, and requires the least room.

The mode of dressing seed wheat, practised by hundreds of farmers in this district, is to wet the seed by various modes, and *dust arsenic on the heap dry*, out of the paper it is done up with by the chemist, whilst

another turns the heap over. This is a very unscientific mode, but it is a certain preventive of smut and ear cockle (pepper kernel), and I have reason to suppose of the ergot.

The apparatus required is a tub, half-hogshead size, a skep, shovel, broom, fleeter, and stick to stir the wheat in the skep, and lay across the tub to drain out the liquor.

The mode :—Shoot half a bushel of lime into the tub a week or two before seed time; add water or drainings from the cattle-yards, sufficient to cover the wheat when dipped; stir the wheat in skep well, skim and turn on the floor, and thus onwards till one-third or one-half of the quantity required is wetted. If one man wet the seed, then dust on the *dry* powdered arsenic, and turn and mix the wheat, and then proceed the same with the other portions, and afterwards turn all over; round and sweep up the heap, and leave it all night. The liquor in the tub should be as thick as bricklayer's lime-wash for walls, adding as wasted, and lime *may* be sifted on the heap.

The cost :—Arsenic 6d. per lb., a quarter of a pound dressing four bushels of seed, costs less than a halfpenny per bushel—the spent lime is worth its cost as manure. It may be thought that the skep should be sunk in the liquor, and the wheat slowly poured in, to cause the light grains to float; but an extra stirring will rectify this. If two persons are employed, of course one may sink the skep, and dust on the arsenic on every skep-full shot on the floor, whilst the other stirs and skims the wheat.

I am, Sir, your humble servant,

CHARLES POPPY.

Witnesham, Ipswich.

ON LAND DRAINAGE; with some Remarks on Meteorological Influences, as connected therewith.

By J. H. CHARNOCK, M.R.A.S.E., Land Agent, &c.

Second Edition.

Longman, Brown, Green, and Longmans.

Our readers will find the theory and practice of land drainage discussed in this pamphlet with the same intelligence that characterized Mr. Charnock's less permanent performances. Mr. Charnock, while insisting that the practice of drainage must vary with the circumstances in which it has to be executed, argues for many exit channels for the water rather than the few far apart, which some believe a greater depth to justify. We give the following passages in explanation of his opinion on this point :—

"Very recently I have seen some strong land which has been drained at about 60 feet apart, and from 4 to 4½ feet deep, upon which the water has stood during the whole winter and spring, without any beneficial effect whatever being produced by the drains. So wholly ineffectual, indeed, has this work proved, that one field, which could not be got ready for wheat last autumn, was reserved for spring corn; but, although drained, there never was an interval of sufficient duration from rain to allow of its being sown; and it now remains a bare summer fallow. I ask, then, what becomes of the theory of a 48 hours' action? The practical truth is, this land yet requires to be thoroughly drained; and this is now being done in some of the neighbouring fields, with drains 3 feet deep, and from 20 to 24 feet apart, at a cost of about £4 10s. per acre. Let me, however, guard myself from being understood as disparaging deep drainage under suitable circumstances; it is the inappropriate application of it I would guard you against—the abuse, and not the use. I have had drainage inspections under my charge where the depths and distances were as various as from 6 to 7 feet deep and 50 to 100 yards apart, to 3 feet deep and 18 feet apart; all of which are perfectly effective on their respective subsoils, because suited to the characteristics of each.

"On the strong lands there is another reason, irrespective of the mere removal of the superfluous water, for more frequent drains being preferable; and that is, the more ready diffusion of atmospheric action to the soil, whereby its mechanical condition is so much improved. If we take a sectional view of the two masses of soil comprised between parallel drains of 18 feet and 36 feet apart, we shall at once perceive that not only will the superfluous water be sooner evacuated from the one than the other, but in the same ratio will the external air be sooner admitted, and more universally distributed throughout the entire area of the narrow than the broad gauge; and hence the nearer approximation to that uniformity of tilth which renders the naturally dry lands, of which we have already spoken, so economically productive. I am aware that, on some of the porous substrata, the land does not, what farmers call, 'hold tillage' [retain manure]; but there is no fear of clay subsoils ever being reduced, by artificial drainage, to such a state; on the contrary, this very property of retention, which they possess, gives to the soil, when in proper order, a stamina for production in which lighter lands are deficient. From these considerations, therefore, we may fairly infer that no arbitrary system of depth and distance can be applied; but that effective drainage must be conducted as the circumstances of each particular case may require."

DRAINING PIPES AND TILES. HOW THE INVENTION ORIGINATED DESCRIBED; AND ALSO A DESCRIPTION OF A NEW MODE FOR CUTTING DRAINS.

BY JAMES WHITE, C.E.

Amongst the numerous inventions which have been brought into actual practice during the last quarter of a century, there are none of greater public utility than has been the simple discovery of making draining pipes of clay by moulding orifices. I am therefore induced to believe, that a few particulars respecting this invention will be read with interest; the more especially as the facts I have to disclose will explain its origin, and also the reason of royalties having been lost on the manufacture of draining tiles and pipes; and thereby liberating the agricultural community of a tax which they unwillingly paid.

In the summer of 1839 I was requested to examine a pug-mill at Brixton, then in operation, supplying clay to a brick machine invented by the Marquis of Tweeddale. The parties, at whose request I attended, were Edward Grethead, a country gentleman; John R. Bernie, nephew to the late Sir Richard Bernie, of London Police notoriety; and Gilbert Stephens, a London solicitor. These gentlemen were, jointly, licensees of the Marquis of Tweeddale's patent; and their object in employing me was that I might ascertain the reason why the clay broke, at intervals, on leaving the pug-mill—sometimes while leaving the orifice, and sometimes between the orifice and the brick machine. This machine for making bricks differed in principle from any I had formerly seen; and the bricks made by it, when properly dried and burned, had the solidity of stone. It stood in front of the pug-mill a few feet, and consisted of an ingenious arrangement of rollers for rolling the clay into layers, the thickness of which formed the breadth of the bricks; and, as the clay was being thus rolled out, it was divided by stationary verticle wires into sections forming the thickness of the bricks, and these again were transversely cut by a wire to a proper length. From the clay breaking between the machines it was first supposed that one did not work at a proper speed for the other—the brick machine either travelling too fast for the pug-mill, or the pug-mill too slow for the brick machine; but all the attempts which had been tried to remedy the evil from that apparent cause had failed, and the discovery of the defect, to a certain extent, was accidental. I had taken out my watch to ascertain the number of revolutions the pug-mill was making per minute, and, in doing so, perceived the clay broke once every revolution. I then observed that the fracture in the clay happened when the revolving shaft of the mill was in the same position; and that that position was when the top knives, which assisted in their turn to expel the clay from the pug-mill, were opposite the opening from whence it exuded. By tracing effects to their causes, it evidently appeared that the top knives upon the revolving shaft had not sufficient power to overcome the friction of forcing the clay out of the mill, and when brought in a position to do so, failed, and this was the cause of all the mischief complained of.

A remedy for the evil was the next point to be considered, and this I proposed to effect by fixing an Archimedean screw upon the lower end of the revolving shaft, and thereby keeping up a uniform pressure upon the clay in expelling it from the mill when the shaft was revolving.

In making a design for a pug-mill on this plan, I added a moulding orifice to it for making bricks, and, with this improvement, proposed to the parties who had employed me that the brick machine should be dispensed with altogether. At this proposition they got alarmed, which was much increased on my stating it as my opinion, that every other figure having a regular tranverse section could be moulde l in the same way, and without further alteration on the pug-mill than changing one set of moulding orifices for another, each being adapted to the figure wanted. This they clearly foresaw would place them in a very unpleasant situation, having much expensive machinery of a different description on hand, and also having incurred heavy expenses in forming a company in London to work the patent of which they were the licensees. It also placed me in a disagreeable position, as I was personally known to the Marquis of Tweeddale; and his lordship having, prior to this circumstance, explained to me his invention for making draining tiles on the principle of his brick machine—that is, the clay was first rolled into layers, and afterwards turned over to form the tiles, both of which operations were effected by the machine; and there were several of these machines at work at Brixton,

where the brick machine was, either belonging to the licensees, or to the company they had formed. I stood now between the contending interests of parties, and hardly knew what course to pursue; but, on reflection, I advised Mr. Bernie to acquaint the Marquis of Tweeddale of what had taken place; but this he declined doing, and matters rested for some months. Eventually, the licensees saw the propriety of protecting their own interests; and this induced them to enter into an agreement with me, and a patent was taken out for my invention, which was the first secured for making pipes and tiles recorded in England. At that time I was under the impression that the company, which had been formed to work the Marquis of Tweeddale's patent, were aware of my invention; and I was also given to understand that, if my patent proved successful, it was more than probable that arrangements would be made with the same company to work my patent also; in which case, my patent was to be first consigned over to them (the licensees), and from them to pass to this company. The interest I was to have in the patent was left to be settled by arbitration. The licensees chose Mr. Carpmael, of Lincoln's Inn (their patent-agent), on their behalf; and I chose William Freeman, Esq., of Millbank-street, on mine. I knew nothing of the company, further than that Mr. Hunt, of Whitehall, was their solicitor; and another Mr. Hunt, a leading director; and a Mr. Twining, a principal proprietor. It so happened, however, that I had been deceived, and that none of these gentlemen had ever heard of my invention; and the first time they did so was through Robert Stephenson, the celebrated engineer, Mr. Stephenson having heard of it from me.

When this exposure took place, the licensees of the Tweeddale patent were called on by Mr. Hunt, the solicitor of the company, to produce my plans, which I readily agreed to; but, whether the directors of the company took the opinion of any engineer on the merits of the plans, or were guided entirely by their own judgment, I never learned; but, on their being returned to me by Mr. Bernie, I was informed that the directors of the company were satisfied that moulding orifices for making draining pipes and tiles would never answer. Although I considered this decision as the result of prejudice, or ignorance, the usual barrier against new inventions; the licensees viewed it differently, and, without consulting me, stopped the further progress of my patent, in Mr. Carpmael's hands. This, however, I would not submit to, and the patent was sealed without further interruption. But the confidence which the licensees had in my invention, when the patent was first commenced, had been upset by the decision of the company; and, in violation of my agreement with them, they refused to test the principle of my invention by experiment, previous to specifying the patent; and the plans were made and the specification drawn up without this advantage. In one view the pug-mill is represented making draining tiles through moulding orifices in a horizontal direction; and in another view these moulding orifices are changed, and one for making pipes upon a core, in a vertical direction, is substituted in their place. The whole of which was published in the *Civil Engineer and Architect's Journal*, June, 1840.

I now thought my patent secure, but in this I was doomed to be disappointed. By a single sentence having been inconsiderately added to the specification, without being qualified by another, the patent was ruined. This mistake not only destroyed my own prospects in the patent, but it had the effect of doing what the licensees and the company were little prepared to expect—it upset their interest in the Marquis of Tweeddale's inventions. At the period alluded to, the Marquis of Tweeddale's machines were the only ones in use in England for making draining tiles; and on selling them to the public the licensees, or the company, demanded a large royalty on the tiles produced. Mr. Bernie being a very sanguine man, considered this royalty, after the patent had been fairly in operation, would realize upwards of £20,000 a year, and business went on swimmingly with them for a short time. But after it was discovered that moulding orifices in my specification had been claimed in conjunction with *the incline surfaces of a screw* only, and that these orifices might be used for making draining pipes and tiles, were any other mechanical power used to press the clay through them; machines, on a variety of plans for forcing the clay through moulding orifices, were soon in the market, and sold to the public free of all royalty charge; and these machines being simpler than the Marquis of Tweeddale's, and possessing the advantage of making pipes as well as tiles, which his lordship's did not, they were soon universally adopted: and, as a matter of course, the licensees and the company had their interests in the Marquis of Tweeddale's invention ruined also, and the public stepped in for the benefit.

The mistake which led to these disastrous consequences to private interests, is worthy of record, and may serve in future as a beacon to warn patent agents and patentees against committing similar errors. The principle of the patent was claimed thus—"*But what I do claim as the first part of my invention, is the application of the incline surfaces of a screw to force clay through moulding orifices.*" It ought to have been "*the incline surfaces of a screw, or any other suitable mechanical power.*" By

INVENTION FOR CUTTING DRAINS.

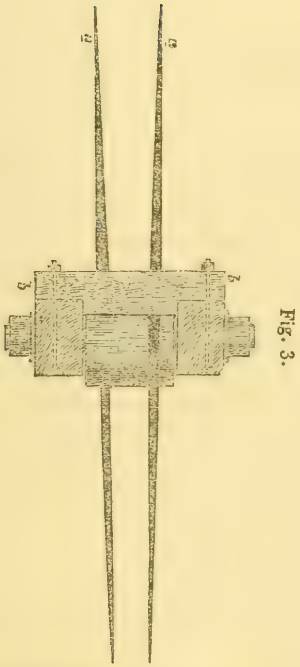


Fig. 3.

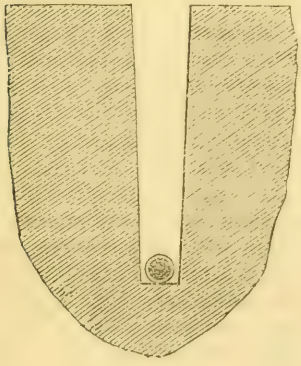


Fig. 4.

Fig. 2.

Fig. 1.

this simple qualification the patent would have been valid; and from the nature of my agreement, it would have been consigned over to one or other of the parties mentioned; and the royalty system would have been continued, for a certainty, on all the draining pipes and tiles made in England, the clay of which had passed through moulding orifices to form them.

From this statement of facts, the obscurity which in after days might have been drawn over the origin of this valuable invention, has been prevented, and the landed proprietors of England are put in possession of a knowledge of the circumstances which have relieved them from paying royalty on draining pipes and tiles, and, as far as these articles are concerned, placed them in a situation to drain their estates at the least possible expense. It must be admitted, however, that this advantage has been obtained greatly to my injury; and from the straightforward course pursued by me in this affair, and the inestimable value of my invention to the agricultural interest, if not from the government, from themselves collectively, I am entitled to reward.

Having disposed of the foregoing subject, I shall proceed to describe my invention for cutting drains; and in doing so I would remark, that the implement is not intended for stony ground, and that there would be as much impropriety in condemning it on that account as there would be in condemning a locomotive engine made purposely for railways, because it would not answer upon common roads. I am aware there have been numerous attempts to cut drains by implements constructed in a variety of ways; but I am not aware of any on the same principle as mine. I propose dividing the operation into two parts: the first, to consist of side cutting the drains; and the second, removing the cut earth. Fig. 1 is an elevation of this implement; fig. 2, a plan; fig. 3, an end view drawn to a larger scale; and fig. 4, a portion of ground in section, showing the drain with a pipe at the bottom of it, three feet from the surface. *a a*, in figs. 1, 2, 3, represent large maleable iron wheels, tapering to knife edges, as shown by fig. 3. These wheels, though thin, will be very strong, and not the least liable to be injured by casual stones: I propose making them half an inch thick at the centre, and having the edges of steel hardened. The wheels run closer at bottom than at top, as shown by fig. 3; the earth being easier removed if cut in this way, than it would be if it were cut in parallel lines; and I conceive the implement will answer better with a small jet of water playing upon the wheels than with the wheels dry; and this can be easily effected by placing a cistern upon the frame *b b*.

When the friction of the implement is greater than any motive power which can be conveniently applied, an anchor, *c*, can be let into the ground in the line of the drain, and, by having a chain from the anchor over a pulley attached to the implement and the motive power applied at *d*, the power will be doubled. When it is necessary to work the implement more than once over the ground to produce the required depth of cut, with the double power employed, two anchors would answer better than one, and the implement working between them. But when the motive power is applied direct to the implement, which I believe is all that is necessary, it should travel the whole length of the drain before it is brought back; and at the commencement of a drain the cutting wheels should be sunk in the ground up to the rollers upon their axis before starting. If the ground is hard, when the implement is put in motion, the wheels may rise to some given height, determined by the hardness of the ground on the one side of the question, and the weight of the implement and sharpness of the wheels on the other. It is also probable the implement will require steadiment, and if so it can be guided like a plough. In moving the implement from one drain to another, or from place to place, it is fixed upon a hurdle or low carriage, and from this hurdle or low carriage it is pulled off into the pit formed to receive the wheels at the commencement of each drain.

In cutting trenches entirely by manual labour, of necessity they are much wider than necessary for laying pipes or tiles; and the earth which has been removed in forming them, having to be replaced again, a heavy expense is incurred in drainage, which it is very desirable to avoid. Reducing the transverse section of the trench, and applying horse power for manual labour, are the leading features of my implement. The removing of the earth between the parallel lines cut by the implement can be effected by ploughs constructed for that purpose —a first and a second; the first removing the larger portion of earth from the trench, and the second the less. Supposing then that the implement were to travel at the rate of one and a-half miles per hour, and that it has to pass over the ground three times to produce the required depth, and that the distance between the drains is thirty feet, then in ten hours it would cut parallel channels over 18 acres of land. Presuming that this might be effected with four horses (but say six), and raising the cut earth by ploughs to require a similar quantity of horse labour, the expense on that account per day would not exceed £3; if to this we add the wages of six men at two shillings per day, it only amounts to four shillings per acre, for cutting the trenches and removing the earth; which is the extent of the improvement I have suggested.

Walcot-place, Kennington Road, Oct. 19, 1848.

TREATISE ON THE NECESSITY OF SOME LEGISLATIVE ENACTMENT TO SECURE TO THE TENANT FARMER THE BENEFIT OF HIS IMPROVEMENTS, AND THE GREAT NATIONAL ADVANTAGE THAT WOULD ACCRUE THEREFROM.

BY A MEMBER OF THE ROYAL AGRICULTURAL SOCIETY.

The subject of the following treatise has for some years occupied the attention of many of our first agriculturists; latterly it has even been the subject of legislative inquiry; but the difficulties which beset the enactment of a law which must apply to an endless variety of circumstances has hitherto caused it to be rejected. The complex nature of the law of fixtures, of entail, and of agricultural affairs, has mainly been the cause of this failure. Therefore, with the views and opinions of those who have previously given attention to the subject before him, the writer will endeavour to describe in the following treatise a brief outline of a law which would afford security to the landlord and tenant.

By tenant-right we understand that protection by which the occupier is enabled to obtain compensation for the *increased value* of the soil he holds under another party, that increased value being due to the *acts*, whether personal exertions or expenditure, of the tenant. A private arrangement between landlord and tenant may secure this tenant-right; but, unfortunately, there are reasons why a landlord should object to allow the tenant for any increase in the value of the soil.

One of these is the law of entail. This law renders the proprietors of entailed estates cautious of expending their money upon property in which they have only a life interest. And, therefore, they prefer to invest their surplus capital where it is under their control, rather than investing it in the soil, to become the portion of one child, to the impoverishment of the remainder of the family. Hence there exists a wish among the proprietors of entailed estates to increase the personal rather than the landed property. The former is easy of disposal and division: the latter is either debarred by the law of entail, or the expense of conveyance is so great as to prevent the investment of capital.

This is one difficulty which a law of tenant-right has to contend with. It is not an insurmountable difficulty. The proprietor of an entailed estate may object to the payment of cash for improvements, yet he cannot possibly object to these improvements being made at another party's expense. So that this difficulty may be overcome by making it optional whether the landlord should incur the expense, or whether it should remain as a debt upon the entailed property, or whether the incoming tenant should remunerate the out-going tenant for improvements.

But before entering at length upon the subject, it will be advisable to say a few words upon tenures. In doing this we shall consider—

1. Tenants-at-will.
2. Leaseholders.
3. Holders of land by an agreement for compensation for unexhausted improvements.

And lastly, I shall state the advantages of a law of tenant-right, upon which agreements can be based for the mutual benefit of all parties.

I shall briefly allude to the *pro* and *con* of each system.

1. Of tenants-at-will.—Some farmers make it their boast that the farms they occupy have descended as a heir-loom from father to son through many generations of their family. They would spurn with indignation any proposal for greater security than that which is inspired by a good understanding between landlord and tenant. This mutual confidence may appear an admirable feature in the characters of the owners and occupiers of the soil, but this confidence is too often mixed with a feeling of dependance. It is the last remnant of a bygone age, when the feudal baron was the lord and absolute master of his dependants—the tenant-at-will has barely broken through the thrall of those feudal times: he may boast of his length of occupation, of the honour of his landlord, and of the mutual confidence that exists between them; yet, after all, he is a dependant, and this feeling of dependance is apart from the spirit of the age. In a few years this feeling will be worn away; the agreement for a farm will be no more than a trading transaction for the mutual advantage of both parties—the one supplying the land, the other returning its equivalent in money. Can the tenant-at-will say his is merely a bargain? Is he not too often constrained to conform to the opinions and views of his superior as a guarantee for his continuance in his occupation? The owner of the soil has a right to let his land to men of his own views and opinions, if he chooses to do so; but if his or their views chance to change, he is not justified—though he has the right—in turning the offending

tenant from his farm without affording him compensation. A simple question will decide the advantage of a tenant-at-will holding. Are they as good farmers, or do they produce the same quantity of food from a given acreage, as farmers who hold land under a system of greater security? Throughout the country tenants-at-will pay the lowest rents, are the worst farmers, have less intelligence, and employ a smaller capital, than the holders of land by any other tenure.

2. Leasehold.—The security of a lease is a great advance upon the tenant-at-will system; but in their general form they bind a man down to one spot, and leave many loop-holes for encroachment. A lease ensures possession to the tenant for a certain number of years, upon the payment of a yearly sum of money, and by the performance of certain specified conditions. During the term of agreement the farmer possesses the advantage of his improvements. However, leases have failed to maintain that progressive advance in the fertility of the soil which the wants of a daily increasing population render necessary. At the commencement of a lease a tenant makes a considerable outlay; but towards the end of the term too many look to their own interests, rather than the wants and requirements of the community. If his improvements and expenditure continue, the tenant fears an increase of rent should he remain in the occupation; and if he leaves at the expiration of the lease, there is no claim for capital fixed in the soil. Therefore during the latter end of the term the outlay is reduced; and not only upon permanent improvements, but also upon the expenditure for artificial manures, cattle food, and labour, which suffer a considerable reduction and as a matter of course a decrease in the produce of the farm is the consequence. The labourer suffers by the loss of employment; the farmer from an inadequate return for misapplied capital; the landlord from the deterioration of his property; and the public from a decreased produce: all this arises from the want of security for the investment of the tenant's capital in the land.

If the soil is of greater value at the expiration of a lease than it was at its commencement, and even if this increase is caused by the acts of the tenant, yet is he liable to an increase of rent; or if he objects to the payment of more rent, he has the choice of leaving the farm. Now, if at any time the tenant has made his farm of greater value, he is justified in doing all he can to lower the condition of the land previous to the expiration of the lease; that being the only safe means—in the absence of a compensation clause—of obtaining recompense for the former outlay. If this course were continued for many years, it would reduce the land beyond the paying point; but for a few years a highly cultivated farm will yield an ample return, even under the system of taking as much as possible from it and adding as little as possible in return. It is an objectionable system; but if the tenant did otherwise, he may have the option of leaving behind him a great portion of his capital, or of paying interest upon that capital by an increase of rent. An increase of rent would be justifiable if the landlord makes the improvements; but if the landlord exercises his *right* of raising the rent, because his tenant has made a farm of greater marketable value, such an act, though justifiable by the present law of property, yet is far from being an act of justice; and such proceedings are sure eventually to produce bad cultivation, as no farmer will dare to lay out money at the commencement of a short lease, much more at its termination. Unfortunately landlords have occasionally exercised the privilege they possess of claiming as their own the increased value or capital which a tenant has deposited in the soil. But those who countenance the practice are ignorant of the result, for such proceedings are certain to cause a depreciation in the value of the soil. Such landowners can only obtain tenants well worthy of them—men who have no money to expend in improved cultivation; and these men do not fear an increase of rent, because they can always quit their farms without leaving their capital fixed in the soil.

These transactions are well worthy of censure: they are far beneath the honourable character of the British landowner and of the British farmer. But instances do occur to show the infallibility of human affairs—death may remove a landlord who encouraged an improving tenantry: the successor, either from ignorance or from mere opinion, may not appreciate these improvements to the same extent his predecessor had done.

If the tenant is not allowed by law for the increased value of the soil, or in other words, for unexhausted improvements, it will be his interest to obtain, as it is the interest of the landowner to give, such security as will recompense the tenant for a judicious outlay of capital that he has not reaped the full advantage of. Such security would be far more satisfactory to both parties than a long lease, which binds the landlord to a tenant and the tenant to a certain extent of land for a specified number of years.

It is perhaps unnecessary to allude to the useless covenants introduced into leases, which serve but to fetter the exertions of an enterprising tenant. Landowners may take it for granted that he who farms well does no injury to the soil, whatever course of husbandry is practised. The interests of landlord and tenant are combined, for the same cause which adds to the income of the latter improves the property of the former, and *vice versa*.

Take, for instance, a farm held by a tenant who has neither skill, industry, nor capital; mark the result: his returns are even inadequate to the trifling capital he employs, whilst the land is yearly depreciating in value. But he is succeeded by a tenant who possesses the two essentials of a good farmer—*intelligence and capital*—by whose exertions the produce of the farm affords a fair per-centage for the capital employed, leaving a sufficient surplus to recompense the tenant for his personal exertions; whilst the increasing productiveness gives year by year an additional fertility to the soil, at once increasing the tenant's income and the value of the landlord's property.

In one or two respects the interests of landlord and tenant may appear to be at variance; but are they really so? The excess of useless hedges, of hedge-row trees, of game, of pasture land, is the chief matter of difference in opinion. The owner of the soil derives an income from these; but the question is, does this income equal the increased rent which the tenant could afford to pay if the superfluous hedges and hedge-row trees were levelled with the ground, the game destroyed, and a great portion of pasture converted into arable land? This view of the subject will not meet with the approval of those who delight in the picturesque appearance of the country, or of those who deem the sports of the field one of the essentials of life. However, the great majority are influenced by a pound, shilling, and pence view of the subject; and these mercenary lovers of profit will not allow their own interests and the wants of a daily increasing population to be overwhelmed by the amateur sportsman and picturesque lover.

The objections which are here urged against leases, of course apply to the general form, and not to an agreement that would give security to the landlord, whilst it affords compensation to the tenant for permanent improvements, and leaves him unfettered by useless covenants; and should agreements of this nature become general, or be rendered compulsory by law, they would be preferable to a law which enters into the details of tenant-right, which would not apply to every case or situation.

I shall now proceed to consider the system of hiring land with a provision for remuneration for unexhausted improvements made at the tenant's expense; the land being held either at "will," or by "lease." This method affords a security which offers great inducement for good cultivation.

The following is a form of agreement adopted on an estate in Lincolnshire, and read by Major Beresford (who strongly advocates the system), at the meeting of the Saffron Walden Agricultural Society in 1847. Major Beresford, in his speech before that meeting, said:—"That where there was an agreement between landlord and tenant, and that agreement made a fair provision for remuneration for permanent improvements made by the tenant, I consider there is far greater inducement for a good tenant to improve his farm than where there was a *distinct lease*, with clauses binding upon both landlord and tenant. Now these agreements between landlord and tenant are from year to year; and after, in the former part, laying down the style of cultivation to be pursued on the farm, it then proceeds to state the forms of remuneration the tenant shall be entitled to in the event of his going out of the occupation:

The tenant to be allowed the full cost price of all *bones* (exclusive of the expense of leading and labour), and for all lime that shall have been used in the summer preceding, and the like for all *other bones and lime*, deducting in proportion of one-third part for each and every crop of corn or grain, clover or seeds, since the time the bones or lime were laid on the land; and also the cost price of any horse, cattle, or pig manure, which shall have been purchased, laid on, and spread, on any part of the said land during the last year, from which no crop of corn or grass has been taken; but if a crop of corn or grass has been taken, then one-half shall be allowed. And also the cost price, with the labour of sowing, of all grass and clover seeds which shall have been sown the year preceding the expiration of his tenancy, if they have not been stocked after old Michaelmas. And also the value of all *manure made in the fold-yard, stables, or buildings, from the last year's produce* of the farm, or from any oil-cake that may have been used in the winter preceding the expiration of the tenancy, such additional value to be ascertained at one-third part of the cost price of the cake, exclusive of the carriage. Also the *value of all the labour done to the clay land* that has been ploughed not less than five times in a good, proper, and husbandlike manner, and well and regularly summer fallowed the year preceding, but not otherwise; and for the *seed wheat* sown on the same; and for the seed and labour of *once ploughing, with harrowing and sowing*, of all the land sown with wheat in proper course, according to this agreement. Also the full cost of any *draining tiles*, with the expense of *putting into the ground*, he may have properly put in with sole tiles, during the year preceding the expiration of the tenancy, if no crop of corn or grass has been taken therefrom since such draining; but if one crop of corn or grass has been taken, then one-seventh part of such cost and expenses shall be deducted, and so on in proportion for seven years. Also the *cost of claying* any of the wold, carr, or sand lands that shall have been done in a proper manner in the year preceding the

expiration of the tenancy; and the like for all the marling or claying on any of the said wold, carr, or sand lands, deducting in proportion of one-fourth part for each and every crop of corn or grain, clover or seeds, since the year the marl or clay was laid on. And it is agreed, that in case the parties signing hereto shall not agree, the same shall be valued by two indifferent persons, who shall appoint an umpire; and the award of such arbitrator, or umpire, shall be binding and conclusive on all parties.' "

Agreements similar to the above might be framed so as to apply to various customs and systems of cultivation practised in different counties; and if drawn up by a liberal landlord, they would secure everything that a private agreement is capable of. It will be my endeavour to show that though these are admirable as private agreements, yet some more simple system is applicable for legislative enactment.

In the elaborate report of the committee of the Society for the Amendment of the Law of Property, we have the details of the law of fixtures, as they affect the landed interest, clearly set forth; but the committee comes to no final or satisfactory conclusion as to the necessity of the amendment of the law of landlord and tenant. Having given this report my careful perusal, I shall bring forward information from that source—in doing so I shall not adopt the usual plan of making extracts, but my own opinions will be given intermingled with the rough notes taken at the time of perusal. Therefore it will not be fair to claim the following information on the law of fixtures, &c., as original, nor to give my own opinions upon the credit of a committee report. The reader must therefore be content to judge from the matter itself, and not from the mixed source from whence it is derived.

The reason for adopting this plan is to compress the information into as short space as possible, so that you may be spared the tediousness of reading, and I the trouble of writing a long essay.

The following remarks on the subject of the addition of a compensation clause contain, in addition to my opinions, the information from the report of the Committee of the Law of Property—to whom the following question was submitted for consideration—"To consider the propriety of amending the *law* of *landlord* and *tenant*, by giving the tenant a right to compensation for permanent improvements; having regard particularly to the present rule of law, which prevents an agricultural tenant from removing fixtures."

It is an old and firmly established principle, that "everything attached to or embodied with the soil belongs equally to the landowner as the land itself." Hence the improvements made by farmers are considered as fixtures, because they are united with or attached to the soil—such as machinery or buildings annexed to the land, or of drainage, manures, &c., incorporated with it. These require an outlay that cannot be repaid by the increased income of a short period; yet by law the tenant's interest in these expire at the end of his tenancy, unless there exist a special contract to the contrary. Therefore, where a special contract does not exist, it cannot be to the interest of the tenant to spend money upon improvements towards the end of his term.

Steam engines and mills *for manufacturing the produce* of a farm are removable—a cider mill for instance. A nurseryman may remove young trees that he has planted—other tenants may not. A farmer cannot remove a carpenter's shop, pump-house, for the use of the farm—the same rule probably applies to threshing machines. But the agricultural tenant ought to possess the right of removing fixtures erected by him, to the same extent as the manufacturer. At least an agricultural tenant ought to be allowed by law to remove fixtures that he has himself constructed at any time during his tenancy, or at the expiration of such tenancy, allowing compensation to the landlord for the injury done by removal. But fixtures that cannot be removed, such as increased productiveness of the soil gained by drainage, manuring, or by any other means, can only be compensated for by a value being put upon that increased production. But in the present state of the law the tenant cannot obtain compensation unless he makes a special agreement for that purpose.

The personal relations, which in former times existed between landlord and tenant, placed the latter in the condition of a dependant; and consequently the bargain was something more than a contract with mutual advantages for the payment of rent on the part of the tenant for the use of land supplied by the landlord. In those times but slight importance was attached to the interest of the tenant—he had no voice in the legislature; hence it is no wonder the law of fixtures made by the landowners protected the freeholder, whilst the more limited, though not less important, rights of the tenant were not considered, in those early times, worthy of notice. Though the law of freehold still exists by which the tanant forfeits any right to compensation for anything fixed in the soil, yet the relations between landlord and tenant are altered. In former times the tenant was a dependant upon his landlord: he is now, or at least he ought to be, independent of him; and if there is anything wanting to complete that independence, it is that security which remains to be fixed by law.

The contract between landlord and tenant is simply a bargain, the one party paying a fixed

yearly sum for the use of a certain quantity of land. If the tenant takes the land at its market value, and so long as the tenant pays this yearly sum, and at the end of his term gives up the land in the same state as it was when he received it, he has fulfilled his part of the agreement. The tenant has no right to restore it in a worse state, and the landowner has no reason to expect it back in an improved state; but if the soil is less productive than at the time of the agreement—why, the landowner is entitled to compensation; on the other hand, if the produce is increased the tenant is entitled to a proportionable compensation. In these few words are contained the system of tenant-right which the author advocates: it will be seen that the rights of the landlord are advocated as strongly as those of the tenant. It has been, and will be, my endeavour to show that if compensation was allowed to the tenant for the increase, and to the landlord for the decrease in the value or productiveness of the soil during the term of a tenancy, it would be a national benefit. It would allow of that progressive improvement of the soil which would every year bring it nearer and nearer the climax of productive cultivation.

In the report of the committee before alluded to are the following questions, in relation to improvements which it is impossible to remove from the soil:

"1st.—Is it proper that the landlord should be compelled to buy what he has never bargained for?

"2.—What are improvements for which he ought to be obliged to pay?

"3.—Ought not the landlord to have the option of making the improvements himself?

"4.—By whom, in cases of difference, is the question of compensation to be settled?

"5.—On what principle, and at what stage of the proceedings, is this to be done?

"6.—In what manner are the claims, when settled, to be enforced?"

A law compelling the landlord to pay for an improvement which he does not wish to purchase, or which he does not deem an improvement, appears to have some objections; but if the owners of the soil receive the benefit of an improvement, it is but just that the party at whose expense the improvement is made is entitled for compensation by an equitable valuation.

Improvements are divisible into four great classes—1st, buildings; 2nd, roads, fences, draining and irrigation, which permanently improve the soil; 3rd, the application of marl, clay, lime, &c., the effect of which extends beyond the second year; 4th, the application of manures which effect a temporary improvement.

It is the general practice for the landlord to erect buildings; and hence if new buildings are required these are, or ought to be, made a matter of bargain at the commencement of the contract.

The three last may be classed together. The variety of climate, situation, and custom of the country, renders it difficult to fix a uniform rate of compensation for improvements. Draining, claying, road-making, and manuring, vary in their effect: on one farm the effect is more permanent, on another the expense is greater.

The landlord possesses an equal right with the tenant to make the improvements, and it appears he is the party who should make them rather than the tenant, the latter paying interest upon the money invested. But special improvements must generally be a matter of agreement, and not of right; a difference of opinion may exist as to the best manner of performing, and of the profitableness of a so-called improvement. The landlord ought to be allowed the right of making improvements; but unless the tenant deem them as such, he has no right to enforce the payment of interest on the money expended in such improvements. This will be a difficult point in framing a special act for compensation for permanent improvements: the landlord and tenant may often disagree as to the propriety of improvements, and as to their value; and these variances can only be settled by arbitration. Compensation might be rendered compulsory by law; but the law could not fix a standard by which disputes could be settled.

On what principle is the amount of compensation to be settled? There are two standards—first, the increase in the value of the land at the end of the tenancy, that increased value being caused by improvements made at the tenant's expense; and, secondly, by the prime cost of such improvements, subject to a proportionable deduction for subsequent enjoyment by the tenant.

The first is a strictly just method—by it the tenant would be bound, so far as his acts are concerned, to restore the land in as good a condition as he received it; *and all increase of value arising from his acts would entitle him to an equivalent compensation; and by the same rule the landlord would be entitled to compensation for depreciation in the value of his property, arising from the neglect of the tenant.* If this just principle was established, it would secure the progressive improvement of the soil, by ensuring the application of capital to its cultivation. The tenant farmer would be obliged to proportion the quantity of the land he hired to the capital he possessed; for if land was then cultivated with inadequate means, it would entail a severe loss upon the tenant, by his obligation to allow compensation for the depreciated value of the farm, on his leaving it in an impoverished condition. It will be alleged that this system is difficult of application; however,

it is less so than a system of compensation for each separate improvement. The former will require but one arbitration at the end of the term—the latter requires constant attention during the term of the lease, and probably a valuation at its expiration.

To obtain the necessary data as to the real value of the soil, an estimate must be made at the commencement and at the expiration of the tenancy, from some fixed standard; though in fact only one valuation would be required, for the rent at which the land was taken would be the value at the commencement of the term, and the same standard would apply at the expiration of that term.

It is alleged in objection to this system that proof would be required, 1st, that the specified improvements had been made, and that the additional value of the land arises from improvements made by the tenant, and not from other circumstances—such as the state of trade, the number of paupers to be maintained, the county and other rates, which vary in amount, the making a road, railway, or canal, the building a town—each of which affects the value of land, either by increasing the market price of its productions, or by rendering it of greater value for other than agricultural purposes. These undoubtedly affect the real value of land, but they do not materially affect its *capabilities of production*, and do not tell against the adoption of a standard of valuation, which being fixed at the commencement of the tenancy, continues in force until its termination. If an act for statistical agricultural returns was passed, it would greatly assist these valuations; for these returns would show the yearly produce of the farm; and though this may in part be attributed to an extraneous and temporary fertility, given by the expensive application of manures and high cultivation, yet such a return would form a fair criterion upon which to found an estimate.

It would be impossible to fix a standard upon which to estimate the special improvements of draining, claying, manuring, &c.; I therefore throw aside every argument that might be brought forward in favour of an act of Parliament for allowing special compensation for any of these; but I *centre them in one great fact, that the tenant farmer should be allowed by law to claim compensation for any increase in the value of the soil he holds, caused by his own acts or exertions, in whatever shape they may be applied; and that the same law should allow the landlord to obtain compensation for depreciation in the value of the soil caused by the acts of the tenant.* And this compensation should be fixed by arbitration at the commencement and at the termination of the holding—one arbitrator being chosen by the landlord, the other by the tenant; if these disagree the matter in dispute to be referred to a tribunal, whose decision is final. I have thus, in a few words, explained a system of tenant-right which, though it would give ample security to both parties when occasion required it to be exercised, yet it would not interfere with the present holdings by agreements for permanent improvements, leaseholds, or tenants-at-will. And as long as a good understanding could be secured between the landlord and tenant, the system of arbitration which I now urge would be seldom resorted to; for arrangements for special improvements are far better made by private agreement than by legislative enactment. But this law of tenant-and-landlord-right would be a broad basis which could at once be resorted to, to afford security to the landlord and tenant, by preventing those flagrant losses which occur by a tenant giving up his farm at a short notice, or having the advantage taken of his improvements by an increased rent; and on the other hand, it could be resorted to as a security on the part of the landlord to prevent the farmer taking more from the soil than he is justly entitled to—that is, leaving it in a worse state than he received it.

R.

ON EARLY SPRING FEED.

BY M. M. M.

The climate of England is of a very peculiar character. Little dependence can be placed on its changes; nor can even the circumstances which influence it be laid down by the best meteorologists with anything like certainty. The only certain circumstance connected with our climatic changes appears to be, that dry and wet, and hot and cold seasons occur—with certain exceptions—in cycles. There are observations very much tending to show that forward or late springs run in successions of the same description. Taking the month of April, for the years 1835, 1836, 1837, 1838, and 1839, they were cold and backward; then in 1840, 1841, 1842, 1843, and 1844, they were mild. Again, 1800, 1801, 1802, 1803 were mild, while the succeeding six years were cold in the month of April. Upon the whole, while the tendency of our seasons appears to be that of mildness in February, so as to stimulate with a premature vigour the dormant vegetation, the months of April and May are much

more severe, and there has been more difficulty than usual to procure early feed for the young sheep and the milking ewes.

Too generally they are allowed to browse in the young seed-leys, eating up the very hearts of the plants before they have attained their vegetative powers, and thus laying the foundation of weak and sickly plants throughout the remaining summer. Other parties reserve for their ewes and young sheep in the spring a portion of the after-grass—called variously fog, rowen, aftermath, &c.—instead of consuming it in the autumn.

The character of this, however, is that of dried woody fibre, unsuited to the wants of the animals, presenting, instead of the young tender succulent products of spring, the bleached, innutritious, frost-bitten, and weather-worn grass of the year preceding.

But he must give them something! And, unless some better plant can be devised for his necessities, he must use such as he has available. A better plan still, is to prepare a piece of ground by manure, liquid or solid, of a very stimulating character, or by irrigation, so as to force vegetation to a point beyond almost the power of the untoward seasons to check; and thus to be provided with a pasture at any hazard. Circumstances, however, prevent this to a very considerable extent; and excepting in the case of water-meadows, which are available only on a small scale, and which present features favourable for the production of early spring feed beyond all other plans whatever, it is not very easy to supply the wants of the stock in any satisfactory manner.

The stock requiring early spring feed are of different descriptions in different places. In some districts fat lambs are the great desideratum in stock producing; and unless the mothers have a plentiful supply of succulent food, in order to stimulate a large production of milk, and also to tempt the lambs themselves to eat as soon as possible, in order to assist their development; or even where lambs are bred in the ordinary course of grazing, and where the number is considerable, it is almost impossible it get, in some severe springs, food of a character suited both to the mother and the offspring. But the great value of spring feed may also be in some measure understood, from the difficulty parties often have in obtaining soft green food for their feeding sheep of one year old. Many farmers make an object of this. Availing themselves of the early maturity of the Leicesters, they feed them liberally from their birth; and by attendance, feeding on cut turnips in the winter, and so avoiding the expenditure of energy in catering for its subsistence, the animal has more power to lay on fat. Now, in a spring such as we have had lately, much difficulty is experienced in sustaining the animals in a thriving state between the failing of supplies of turnips, and the coming forward of the leys and pastures. For, as they are changing their teeth at this period, there are only some kinds of food which will even sustain them from losing flesh; and as high feeding at this critical time is indispensable, it is difficult to say how the animals can be kept up.

In some districts *winter tares* are much relied on; and taken all in all, there are few plants which are equal to them, in produce, nutrition, and in general usefulness. Few plants are consumed with more avidity—few make a larger return of manure—and few will make a more decided difference in the flesh of the animals to which they are given. Sprengel gives their constituents as follows, taking both straw and seed in 100,000 lbs.:

	lbs.
Potash	1352
Soda	337
Lime	1057
Magnesia	233
Alumina	18
Oxide of iron	9
Oxide of manganese	6
Sulphuric acid	86
Phosphoric acid	210
Chlorine	63
Silica	321

The above analysis is given by adding together the constituents of the straw and that of the seed; but it may be said to approximate rather than precisely indicate the quantity of each constituent. Levi gives (*Annalder Chemie*) them different to Sprengel, having a much larger quantity of phosphoric acid, and much more soda, but agreeing in the quantity of potash contained in it being large. Professor Johnston, however, has shewn that very variable quantities of ash is often left at different periods of the growth of plants, and gives the vetch as an instance. Before flowering it gave 15 per cent. of ash, in flower 12·2 per cent., while when the seeds were ripe it contained only 6·6 per cent.; and that the silica in the same cases had increased in the proportions of 0·70 per cent. between ripening and being in flower. Thus the state of ripeness may, sometimes, influence the plants in their degree both of fixed constituents, and in their nutritive character. As tares are eaten green, they contain the largest quantity of potash and soda, and are so far useful in building up animal structures. They are, however, not a *spring*, but a *summer* plant; and no stimulation, care, or cultivation, with which we are acquainted, can induce them to offer a full bite in February, March, or even in April, and hence they do not come up to the mark as a desirable spring feed.

The *red clover* is more under command. It is quite possible to stimulate it, so as to have a considerable development of leaf early in the season; and the clover is too well known to be most nourishing and valuable, to need any remarks, where it can be obtained; but such crops are, on most soils, becoming so uncertain, that it is by no means easy to calculate how much dependence may be placed upon it as an available edible, at the time when it is most wanted. But the greatest drawback is, that whatever development the plant may have at the time it is broken, in will not spring again for several weeks, and the sheep eat out the vitals of the plant, and it never recovers, perhaps, during the whole of the summer. The clover has the property of resuscitating too slowly in the spring months to be useful for spring feed. The recent researches of Professors Ogston and Way have ascertained the mineral constituents to be in 100 parts—

Silica	3·34
Phosphoric acid.	6·35
Sulphuric acid	4·18
Carbonic acid	16·93
Lime	35·39
Magnesia	11·22
Peroxide of iron.	0·97
Potash	14·85
Soda	1·40
Chloride of sodium	2·36
Chloride of potassium	2·96
	99·95

The constituents here are very materially different from the list given by Sprengel, and the greatest discrepancy is in the sulphuric acid, accounted for partly by Messrs. Ogsden and Way adopting a new mode of detecting the sulphur in the plants. Still it has per-centages enough of soda, of potash, of phosphoric acid, to show it to be very nutritious. How well it is calculated to form milk, appears from the analysis given below, in 100 lbs.:—

	lbs.
Phosphates	4·15
Chlorides of potassium and sodium	2·17
Soda pure	0·45
Total fixed constituents of milk.	6·77

Italian rye-grass comes next, and we are not possessed of a more valuable plant for rich herbage, rapid growth, capability of bearing frequent cutting, nor one more agreeable to all kinds of stock. The manner in which hares are attracted by it from all quarters, far and wide, shows how it is relished by animals who have their unrestricted choice of food; and the way in which it will be eaten by sheep and lambs, before any other plant is touched, is sufficiently indicative of its value as a fodder plant. Its growth is so rapid, that we have known of from six to ten crops taken off in a year—assuming, however, that the soil, treatment, and climate were everything that could be desired as favourable to its development. Its composition, as recently ascertained by Messrs. Ogston and Way, is—

	Parts of ash.
Silica	59·18
Phosphoric acid	6.34
Sulphuric acid	2·82
Lime	9·95
Magnesia	2·23
Peroxide of iron	0·78
Potash	12·45
Soda	3·98
Chloride of sodium	2.27
	100·00

It will be observed that there is no very remarkable difference in the chemical composition of the clovers and this rye-grass, excepting in the amount of silica, in the quantity of which the Italian rye-grass stands out far beyond the rest, and its rapid assimilation of which, it appears, it may have the capability of effecting by this very circumstance. It is necessary, however, that in soils where it is expected to succeed, there should be an abundant supply of free silica. The Professors also point out that the maturity of the plant does not very materially effect its chemical composition; but, like the vetch, it increases in its silica in some slight degree, and also in lime; but decreases slightly in potash, soda, and phosphoric acid.

The objection, however, to the Italian rye-grass in practice is, that it is unable to bear our old climate; and however fast it may develope itself in a few days, a single frosty night will break down its structure; and so it will have again to grow from the bottom. It might be expected that by sowing for a series of years, the plant, with all that power of adaptation to circumstances which is so obvious in all nature, would soon become so acclimatised as to be inured to the severities of our northern clime; but it is somewhat remarkable, as also illustrating the compensating principle in nature, that as it gains climatic energy, it loses its rapidity of growth, and hence all cultivators most sedulously seek imported and foreign seed for this reason.

The best spring-feed we are acquainted with is rye. Some years ago, we recommended this, in an essay, to which the Royal Agricultural Society of England awarded the prize; and subsequent experience has not enabled us to find any plant better adapted to the general wants of the stock, in the early spring months. Improvements in the selection of forward varieties have taken place; and the "St. John's Day rye" is, by some, said to be an early and successful cultivable variety; but the

trials of the ordinary kinds have been, when fairly brought out, an invalvable resource in trying and difficult seasons. On the 9th of March the writer visited Mr. Mechi's farm, at Tiptree; and, at that date, the rye growing on his poor moor soil was 12 inches in length, and presented both a quantity and quality of bite, which we were absolutely unable to see in any other place or circumstances whatever, except in Mr. Dickenson's rye-grass. It is difficult to estimate the bite likely to be afforded by such a plant as we there saw, but we have sometimes witnessed as small a crop mown for winter fodder, both of grass and clover. In the absence of Mr. Mechi, at our visit, the writer was not able to ascertain whether it was any particular variety; but Mr. W. P. Taunton, speaking of a rye he obtained of Mr. Cooper, of Ardleigh Wick, and which he sowed on the 3rd of September, 1845, says, in the months of *January* and *February* it exhibited, to use his own words, "a dense mass of foliage, and a richness of verdure, to which none of the other varieties sown in the same field on the same day were at all comparable. Indeed, if it had been then required, it might have been, without any imputations of waste, fed off by ewes and lambs in the month of *February*, and it may be doubted whether it would have been more profitable for sheep feed at any subsequent period."

Mr. Hewitt Davis is also a successful cultivator of *rye*, and which he very properly introduces between his wheat and his turnips. He thus calculates the expense of its cultivation—

	Per acre. £	s.	d.
Broad-sharing the wheat stubble . .	0	6	0
Ploughing by two horses . . .	0	10	0
Harrowings and drilling . . .	0	6	0
Seed 1½ bushel	0	7	6
Sundries	0	5	0
Half year's rent, 10s.; rates and tithes, 1s. 6d.; management, 2s. 6d.; and interest and extras, 6s. . . .	1	0	0
	£2	14	6

The value of his eatage he makes £1 5s. per acre, which he usually consumes, we believe, in April. It must be that the charges are hardly fair to the rye. The broad-sharing would be necessary for the turnips: the land would be growing nothing if the rye were not sown, nor can the writer see the propriety of charging rates or tithes. These deductions made, the charge would be, assuming 6s. instead of 10s. per acre for the ploughings, reduced by at least £1 per acre. And the difference between the possession of spring food and the destitution of it, is sometimes a difference absolutely incalculable.

Having adduced the evidence of Mr. Mechi, of Mr. Taunton, and of Mr. H. Davis, speaking most strongly in favour of spring rye for sheep feed, it only remains to describe its mode of cultivation:—

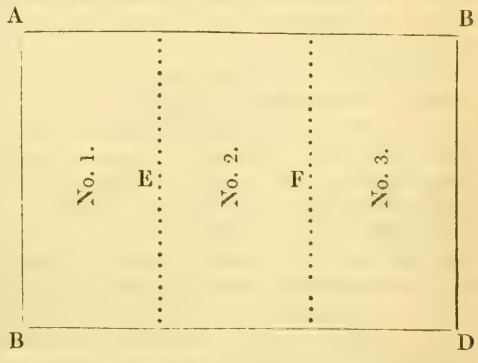
1st. Clear the wheat stubbles. This, under any circumstances, must be done for the turnips, and it is, so far, a step in that direction; in clearing no time should be lost.

2nd. Plough, when the surface is cleared, and harrow fine. The ploughing need not be deep; but if the surface has become very dry with clearing, it may be necessary to bring up sufficient of the moist soil to germinate the seed.

3rd. Apply a little manure. No part of this is lost. The sheep consume the produce on the land, and it is, if not all taken up by the plants, left in the soil for the turnips, or it is converted into lamb or flesh; and therefore there is no more loss than there is in a crop of turnips. If early and vigorous feed is expected, why should the seed be sown where it will be starved and perished from poverty? If rye is sown on such a sterile spot, can it be expected to succeed? and yet such parties will complain, and say, we cannot get rye to grow a good bite! Two-and-a-half cwt. of guano, or six loads of manure, is ample.

4th. The writer applies 2½ instead of 1½ bushels of seed, and this he prefers; at 4s. 6d. per bushel, it costs 11s. 3d. It may be drilled or sown broadcast, at the option of the cultivator; the former is, perhaps, on the whole, the better plan, as equal distribution is desirable, to afford each individual plant as much space for tillering as possible.

5th. As to consumption, the writer would advise the land to be fed off by the sheep in breaks. Supposing A B C D to be the field, let it be divided by hurdles, as indicated by the dotted lines E F, and first break the portion numbered 1; when eaten, remove to number 2, and when this is consumed to number 3; and by this time number 1 will be grown sufficiently to break again.



The writer will close, by the recapitulation he gave at the close of his prize essay, in summing up its advantages:

1. Provision of excellent green food is made at

a season of the year when it is of all others most wanted.

2. It is produced without sacrificing any portion of the usual rotations on a farm, and with little extra labour; nor does it interfere with the management of any preceeding or succeeding crops.

3. It will grow on any soil, but is especially calculated for poor loose sand (which should always be manured), where every other green esculent is more or less uncertain.

4. It will bear any degree of frost to which our climate is subject, and is sufficiently hardy to defy the effects of the coldest situations, being there cultivated instead of wheat, for a corn crop, from necessity.

5. It is as inexpensive, or more so, than any grass or leguminous plant.

6. It is readily consumed by stock, especially young stock.

7. It improves rather than deteriorates the soil upon which it is grown.

Sowerby, Thirsk, Oct. 4. 1848.

POOR PRICE TO FRED FARMER OF THE COPELANDS.

Dear Fred,—I was busy thinking all last night about a letter I was aware I should have to write to you; and, as is natural in such a case, was trying to find out what I should say. As for news, that was out of the question—for where. could I find news in such an out-of-the-world place as this? To be sure I might tell you that the sow had pigged: but what better would you be for that? or that it's a nasty, wet, damp, cold, foggy, drizzly, dirty, overcast, chilly, shivery, unsociable, uncomfortable sort of a day; and what better would you be for that? No, thought I; if I am to write, let me at least write something interesting, or instructive, or amusing, or at any rate agreeable. But where, let me ask you—where is there anything amusing or agreeable to be found in such times as these, when everything is looking dull, from a winterly to a national prospect? Still, after all, there is one small cheerful prospect left us, on which every Englishman, however sad and dull other prospects may be, always turns with a smiling countenance. It is a rousing good fire! Ah! that *is* a prospect.

Well, as I was sitting quietly by the fire, I began to think that agriculture had a peculiar literature of its own—something entirely distinct from every-day literature. It has its own peculiar science in the nature of soils, describing them as clayey, loamy, siliceous, or carbonaceous; and these again into their varieties. Its own botany, in the different kinds of plants of the same genus—as the many sorts of grasses, turnips, and farinaceous plants. Its own vegetable chemistry; and its own manureal chemistry (if we may so call it), describing the art of manufacturing and applying manures. Then in zoology—the different breeds of cattle of the same species. We may read books on the art of working and crossing land; of manuring land; of draining land. It has its own history, biography, and poetry, and a great many more graphies and ologies, and other words ending in *ys* and *ies*, not to forget machinery, one of the principal.

If there are not plenty of works on agricultural machinery, I am sure there is plenty of room for such. And don't you think there is matter enough for, and great want of, a work on the history of agriculture, treating of the manner in which the ancients tilled their land, and how different nations have and do till it at the present day, &c.?

As for poetry, there is, and always has been, plenty of the very best. The earliest poet with whom we are acquainted, Hesiodus, in the piece which he cited, and which gained him the prize when contending with Homer in the Olympian games, speaks thus—

When Atlas' birth (the Pleiades) arise,
Harvest begin: plough when they leave the skies.
Twice twenty nights and days these hide their heads;
The year then turning, leave again their beds,
And show when first to whet the harvest steel.

* * * * *

There naked plough, sow naked, nak'd cut down,
If Ceres' labours thou wilt timely use,
That timely fruits and timely revenues.
Save thee at all points; lest at any, need
Send thee to others' grudging doors to feed.

Every farmer should read those two last lines over at least a dozen times, for there is not a more slovenly or wasteful trade than farming as it is generally conducted. However, the poetry of agriculture, like other poetry, is generally so clothed in fiction, that we can scarcely recognise it. It runs so much into the regions of the ideal that the solid part is lost sight of. Truth gives way to supposed beauty, and the real occupations of a country life are made to give place to some delightful fancies and pleasing hallucinations. The beauty of green lawns and shady groves, the joyous songs of birds, and the peace-inspiring hum of insects, are far more agreeable to the senses than the rotation of crops, or the succession of the various labours; yet the greatest of poets have not failed to wrap them in beauty and elegance of sentiment.

So much for poetry, Fred. A very agreeable and refining thing. But I should be writing to more advantage if I dwelt on something more necessary and useful to the advancement of agriculture. If I could tell you how to grow two crops of wheat in a season, that would be very interesting and exceedingly useful—would it not? But I can't. So for the present you will just have to be contented with growing one, as heretofore.

The greatest drawback with which agriculture has to contend in the present day, is the want of machinery. Instead of having all to go by steam that ever *can* go by steam, they appear in many parts of England to shun every approach towards enginery, of whatever kind. The exact reason for such neglect of their own interest it would be hard to determine; but I believe that the original outlay and fear of insufficient remuneration are in most instances the principal. It has, however, long been proved that nothing pays better on a farm than machinery, to whatever purpose applied.

Now I am aware that on small farms it would not do to begin and erect large engines, or works which would swallow up a couple of year's income; but we so often see farms of from three to four, and even five hundred acres, without as much as a common thrashing-machine, that it must astonish all who are acquainted with the great saving which such an accommodation effects.

When a homestead begins to look like a manufactory, when there is a regular system of preparing food for the cattle, and weighing it in proper portions, and giving it at regular periods; when we see boilers, and steamers, and choppers, and grinders, and crushers, and mixing-tanks, and all the rest of them in motion; then we may begin to expect that farming will be a profitable business, that farmers will become as wealthy as manufacturers and merchants, and that farms will be properly and profitably tilled. It is not altogether the *hard cash* which is wanting, nor yet altogether the knowledge; but it is the spirit to enter spiritedly, and spiritedly to go through, which is absent.

Ah! dear Fred, I do wish it was not altogether such a slow concern, such a confoundedly slow and tardy concern for bringing the cash into the pocket. And that was just Peter Macpatricks' view of the case. You remember Peter? He used to tell me at least once a week.—"Och! masther dear, it's a dirty concern every bit of it. Sure an' wasn't I intirely ruined be the same. Didn't I sthrive for six long months to make me livin' like a dacent man, an' I could'nt? Hadn't I the whole farm of Ballymakenionoduch, that descended from me ancesthors to meself, including nine acres an' a half? as thrue as I'm hare. Och! faith! an' I was born of dacint parents, as I've often heard me mother say; but as for me father—poor man—I never had one. For ye see me mother was a single woman, and lived all alone be herself, barrin' me and the lodgers."

Such was old Peter's tale, which he used to tell me with all the gravity of a Quaker. And yet, Fred, it was not quite so awful a tale as the one which poor King Hamlet's ghost could have unfolded, but did'nt; which, between you and me, I believe to have been none other than a monkey's tail, which he had folded up in his unmentionables, and which of course would have been a very horrid sight for a son to see attached to his father.

I am at the end of my paper, and therefore remain, dear Fred,

Very truly yours,

Poor Price.

EXPERIMENT ON AUSTRALIAN BARLEY.

BY R. W. BAKER, ESQ., OF COTTESMORE.

March, 1846: Received 1 bushel of Australian barley from the Royal Agricultural Society.

April, 1846: Dibbled it over 1 acre of land (after turnips), red loam upon limestone. The crop was injured by hares and rabbits, and a very heavy hailstorm when about ripe. Produce, 6 qrs. 3 bushs. The remainder of the field, 16 acres of Berkshire barley, produced over 6 qrs. per acre. The quantity of seed sown on that part of the field was a little under 3 bushs. per acre.

April, 1847.—Sowed the whole 6 qrs. 3 bushs.

	Qrs.	Bush.
From 4 acres produced	30	3
From 13 acres produced	65	0
	95	3

From 1 bush., sown in 1846, and the produce again sown in 1847, produced 763 bushs. Weight, per sack of 4 bushs., 15 stone 10lbs. to 15 stone 12lbs. gross, *quality good*.—Journal of the Royal Agricultural Society.

TENANT-RIGHT.

REPORT FROM THE SELECT COMMITTEE ON AGRICULTURAL CUSTOMS, WITH THE EVIDENCE.

(*Continued from page* 364.)

Evidence of CHANDOS WREN HOSKYNS, ESQ.

CHAIRMAN.] You are a barrister? Yes.

You have paid a great deal of attention to the state of the law as between outgoing and incoming tenants? Yes.

Lands are held in England either by agreement or custom of the country? Yes, either by lease or agreement for a lease, which would be tantamount to it, or an agreement operating merely as a taking from year to year.

Mr. MOODY.] In the shape of a running lease? Yes; it would be a running lease for a year, but it is not considered as a lease.

Mr. BOUVERIE.] By law any agreement for more than three years must be in writing? Yes.

CHAIRMAN.] Have you considered the subject of compensation to tenants for the improvements of the land? Yes.

Are you aware that in some parts of England compensation is awarded to them by custom? Yes.

The Committee has received a legal opinion that in some parts of the country, where no such custom of giving compensation to the tenants for improvements exists, the landlord being a tenant for life would be unable by agreement to charge his successor in the estate, but that any such agreement, if valid at all, would fall upon the personalty he left behind him. Do you coincide in that opinion? Yes, entirely.

You are of opinion that the Lincolnshire landlord, being supported by the custom of the country, could safely sign an agreement recognising the claims of his tenant, say to six years, or whatever term it might be, for improvements by chalking the land, but that the landlord in Berkshire or Gloucestershire would not be safe at law in signing such an agreement? I think not; and I think that the custom must be very clearly proved in order to charge the property; even in the former case, in the Lincolnshire case, there must be clear evidence of the custom, I apprehend.

You are of opinion then that the agreement by the Lincolnshire landlord would not be valid in itself, but only in so far as it was supported by evidence of the custom? So far as the courts would be willing to receive the custom, and only so far: it could not operate as law further. It would be received in the same manner as the custom of merchants in London is received by the courts, and which has the effect of law.

To take another case: if a landlord in Leicestershire signed an agreement to give five years' compensation for lime, the custom of the country being only for one year, would he be safe as to his personal representative after his decease, in so enlarging the existing custom? I think that it would not charge the estate; the claim would be against his personal representatives.

So that if the landlord, desirous of improving his property, were to sign those agreements to a large extent, and the property were to descend to the minor, a distant relative, the guardians of that minor would, in your opinion, not be justified in paying that compensation to the tenants out of the income of the minor? I think not, as claimed of right.

Therefore their legal course would be to throw the claim upon the legatees of the deceased landlord? Upon the personal representatives.

The personal representatives of the deceased landlord? Yes.

Mr. HAYTER.] Although that is the case, provided the tenant for life is restricted, or is unable to grant leases, yet does that rule apply where the tenant for life is enabled to grant leases? It would apply equally, I think.

In ordinary cases there is a power by every settlement to enable the tenant in succession to grant leases binding upon his successor? Generally: powers to different extents.

And where those cases prevail, or where that power is granted, in such a case is not the tenant for life enabled to grant a lease containing all covenants that are requisite for good husbandry binding upon his successor? So far as the benefit of the lease is derived from the security of the holding, he is entitled to do it, but not so as to extend to all special covenants that he may import into the lease.

Do you apprehend that the power to grant a lease for 21 years of farming land does not enable the tenant for life to grant such a lease as would enable the property to be farmed consistent with the course of good husbandry by special covenants to that effect, binding upon the successor? By general covenants; by the covenants that are usual; but I do not think he could introduce special covenants, operating as a prospective charge.

Your doubt would arise as to whether he could introduce any special covenants so as to be consistent with good husbandry, yet not consistent with the customs of the country? I think so, if they were of a nature to extend the charge upon the estate, or upon the heir to the property.

That may be illustrated in this way: in the south of England, where the Lincolnshire customs do not prevail, could a tenant for life grant a lease under the power of granting a lease, importing into that lease the customs of Lincolnshire, so as to be binding upon his successor? I think not.

Mr. BOUVERIE.] And that would depend very much upon the wording of the power? I think not, because the power to grant leases contained in settlements is granted chiefly with a view to extend the time of holding, but not to extend the powers of the landlord so as to charge his successor on the estate with the payment or with the discharge of any claims that he should import into the lease that were of a special kind.

That is the ordinary leasing power you refer to? Yes; that he would have as tenant for life.

Mr. HAYTER.] He would not have power to put an additional charge upon his successor? No.

The ordinary covenants do not enable the tenants for

life do deal with the property to put a larger charge upon the successor's property? Certainly not.

Mr. NEWDEGATE.] Can a tenant for life grant a lease of mines which would be binding upon his successor? I apprehend that he can, provided that under the settlement by which his interest is created he is not restricted as to mines or minerals, but has the power of granting a lease of the land generally; that where the land is let for 21 years, or for any other period, he has the power to include mines in the lease.

Would not it seem proper that the leasing should extend to the special clauses of a lease granted by a tenant for life? I think not; the lease without a reserving clause would carry the land with all that is "over it or under it;" but the importation of a special clause into the lease, which would increase the charge upon the successor, would come under no analogy with that which was carried by the leasing of the land itself, such as a mine or a quarry, or anything growing upon the land not usually let in the course of husbandry.

Then the distinction is this: that a tenant for life could grant a lease of mines, but could not grant any compensation under that lease for the expense of getting the mines in? A great many excepted cases have arisen before the courts regarding mines, which have carried the law in the mineral districts, with respect to mines, beyond any cases that have arisen as regards agriculture; therefore special decisions of the courts, in which the necessary expenses for opening shafts might be included, would not be taken as of course to apply to any increase of expenses required for agriculture.

Then the result of your opinion is this, that the law with respect to compensation under leases for agricultural improvements is practically more restrictive than it is in the case of mines? I think it is; because it has not been carried out to the same extent by special decisions.

Mr. HAYTER.] You allude, of course, in both those cases, to where the tenant for life has no power to grant leases; because if he has power to grant leases, the exercise of that power must be dependent upon the terms in which it is granted? It is of course dependent on the power given by the settlement.

Both with regard to leases of mines, and with regard to leases for agricultural purposes? Yes.

You are to look at the power of granting leases for the one purpose or the other, and the power the tenant for life is restricted by; the power contained in that deed under which he acts? Yes.

Have you turned your attention at all to compensation to an outgoing tenant for agricultural improvements as between that out-going tenant and the in-coming tenant? I have.

Has anything suggested itself to you in the nature of legislative enactment, by which the existing relations could be in any degree improved? With reference to fixtures or agricultural improvements?

First of all, with regard to fixtures; does anything suggest itself to you with respect to the state of the law as to fixtures, that requires improvement and alteration? Yes, there does.

Be so kind as to specify what alterations of the law on the subject have suggested themselves to your mind? It appears to me that the law with regard to fixtures, in the case of fixtures for trade, or ornamental fixtures, has been permitted to go further by the courts, though perhaps not to the full extent that has been recently stated in some publications upon the subject; but it has gone very much further than the law relating to agricultural fixtures, and upon grounds of argument which are equally applicable by analogy to agricultural as to trade fixtures.

Do you think if the law were so altered with respect to agricultural fixtures as to make it the same as with regard to trade fixtures, that would be sufficient; or do you think the law as to fixtures, with regard to trade and to agricultural fixtures, requires uniformity of alteration? Without doubt it requires uniformity of alteration, that is to say, that the law as to trade fixtures should be more settled, and that the law of agricultural fixtures should be put upon the same footing.

Could you be more specific in your suggestion with regard to the improvements which you think desirable to be effected in the law as to agricultural or trade fixtures? I should suggest that all buildings raised by the tenant for the purpose of his business should be his property, and that he should have a claim on the expiration of his tenancy to the amount which he had laid out on the erection of that property, or such a proportion of it as might be due to him, allowing for decay or dilapidation.

That would be a general rule which you would think capable of being carried out by legal enactment? I think so.

Sir C. LEMON.] Would not a rule of that kind leave it open to the tenant to erect buildings that might be of use to him personally, and not of essential advantage to any tenant who might follow him? If they were buildings required for his trade, they would always be of more or less value, according to the estimates of different parties. Different valuers would estimate the improvements so made to the farm at different rates, no doubt; but in assessing the amount that was to be paid to the tenant as the value of the fixtures that he had erected, I apprehend that would always be an item in the valuation, and should be included together with the extent of dilapidation.

Would not it be more convenient, and more fair if it were alternative? Yes; I should so propose it.

Leaving it open to its either being paid for, or else removed by the tenant at his own expense? I am of opinion that the alternative should exist; that the tenant should have the power of removing the buildings, or requiring that they should be paid for, subject to a valuation.

Mr. HAYTER.] Would you give the landlord the power of refusing the payment for such buildings, or such fixtures; for instance, might it not happen that the tenant might carry on his trade in a different way from the succeeding tenant, or the landlord's wish; and in that event would you give the tenant the power absolutely to require from the landlord or the in-coming tenant compensation for the buildings which he had so erected; or would you not enable the landlord to take them, giving compensation, and in the event of declining to give that, to enable the tenant to remove or dispose of them? I should meet that difficulty by requiring the tenant to give notice to the landlord, previously to the erection of the fixtures, and that after that the landlord should be bound by such notice to take them at a fair valuation.

The tenant giving notice to the landlord; do you mean that that should be given, the landlord having the power of refusal? Yes.

The notice being given independently of the landlord's prohibition, that notice would amount to nothing? I mean merely that the landlord should have a knowledge of it.

Mr. BOUVERIE.] Would the notice to the landlord be merely with reference to the assent or the refusal to take the improvements at the end of the term; would not that be tantamount to giving notice to the landlord, with a specification of his intention to refuse to take the improvement, or to take it at the end of the

term? No, the tenant would not undertake the building if the landlord refused to accredit it.

Supposing the tenant to build irrespective of the landlord's determination, you would permit the landlord to refuse all compensation, and to say to the outgoing tenant, Take away your improvement, after notice? In that case the law would be carried much further than at present, because the tenant would have power to take down the building, which he has not at present.

Do you contemplate that possibility? I think the landlord should have a voice in the matter; that he should have notice of the fact of the building being erected.

In the notice would you allow him to say, "I will not consent, and I will not remunerate you for the building when the term is expired"? I think he should have that power, that the tenant might have notice of his intention, and act accordingly.

Sir C. Lemon.] Suppose a case, that a landlord and tenant had agreed that a certain building should be erected at the expense of the tenant, and that the landlord, at the expiration of the term, should make an allowance, whatever it might be that was agreed upon to be paid, in the case of the landlord holding merely for his own life, that agreement would not be binding thereafter? Not upon his successor.

After his demise that would cease, would not it? Yes.

That comes within the condition spoken of just now? Yes.

Then could that be adopted as a general rule? Not without an alteration of the law.

Mr. Newdegate.] Is not there this great distinction between tenure of trade and tenure of land for agricultural purposes, that in general the tenures for trade are under leases, and frequently building leases, whereas the general habit of letting land for agricultural purposes is either from year to year, or by comparatively short leases? I do not think that that was the principle of distinction that has operated to vary the law with relation to fixtures between them.

You do not think that that difference has operated towards giving the tenant in trade a greater claim for fixtures than has hitherto been possessed by the agricultural tenant? I think not, as a general rule.

Then in the execution of the law relating to fixtures, which you would propose, would you apply the same principle in both cases, namely, that the tenant shall have the option of removing the fixtures in case of a refusal to make compensation for them on the part of the landlord? I think the same rule should exist in both cases.

Mr. Bouverie.] Would you allow a landlord having a limited interest in the land, notice being given to him, to bind by his assent subsequent interests in the land? To have power to do so, do you mean?

Yes. Supposing notice to be given of an intention to erect buildings to a tenant for life, and the landlord assents, by that assent proving that he is willing to remunerate the tenant on going out for that building, would you allow that assent to bind the subsequent interest? I think so.

Mr. Newdegate.] You would connect the claims for the compensation under the agreement or lease, with the estate? Yes.

Mr. Hayter.] You say the estate would be so much improved when it reached the successor's hands, that you would require the successor to give that compensation? Yes.

Mr. Henley.] Then if you would give parties power to bind their successors, with regard to building fixtures, would you also take into consideration any dilapidation of the premises or land, so as to allow them to be used as a set-off against the improvements? I should.

The whole condition of the premises should be taken into account? Certainly.

Mr. Hayter.] Having therefore ascertained your opinion with respect to fixtures and buildings of that description, do you see any mode by which legislation could be usefully employed for the purpose of compensating tenants for improvements on their soil?—I think that the analogy of the same principle would require that the same claims for compensation should arise for permanent improvements to the land.

What do you class under the head of permanent improvements?—Drainage, extensive works for irrigation, and roads.

Would you include fences?—In some cases fences, boundary fences, but not mere divisions of fields.

You think this comes so near the category of buildings that you would class them in the same list?—Yes; I think so.

Both being permanent improvements?—Yes; and that the same analogy must necessarily be followed in degree, throughout the class of improvements which are less permanent, such as alterations which change the constitution of the soil, as marling or chalking.

Or claying?—Yes; or claying, on sandy soil.

Do you think, in that instance, that legislation could compulsorily direct compensation to be given by the landlord to the tenant for those improvements?—It would be very difficult to make it an act of direct legislation; but it appears to me that powers might be intrusted to those who should direct the arm of legislation in enforcing the claim of the tenant for improvements of that kind, that had been made; not that legislation should dictate what the allowance or compensation should be, but merely that there should be a power given by the Legislature, in order to authorize their decision upon such a subject, whether it be the arbitration of a single referee or umpire, or the arbitration of a board or court.

Then you are to be understood that those claims to which you have referred are just claims to be substantiated as against the landlord, and the mode by which you would sustain them would be establishing a species of court of arbitration by which the rights might be ascertained?—That is my view.

Mr. C. Lemon.] And that without reference to any special custom, merely upon the general notion of right? Merely as a general notion of right, under which the custom would be matter of local evidence.

Mr. Newdegate.] Would your suggestion apply equally to holdings from year to year under an agreement as to leases?—Yes, it would.

You speak of the constitution of a court; how would you apply the constitution of a court to the various requirements of various divisions of the country?—By making use of local agents already in existence, of parties who are employed to pronounce upon subjects of that kind.

Would you see any objection to empowering and limiting and defining the powers of local agents for this purpose, without the interference or establishment of such a court?—I think that they would be able to pronounce as efficiently upon the question of agriculture, but that they would not be able to pronounce with the same efficiency as they would when empowered by Act of Parliament, which should constitute them only as part of the system.

Would they not have the same authority, or perhaps a greater authority, if their decision was to be referred to one of the courts of law; one of the courts of circuit, as now established?—I think not; because I

think neither the farmers nor the landlords would attach quite the same value to a judgment pronounced by a court of law as to the judgment of a court which was familiar with and understood the subject of agriculture, as well as the bearing of the law upon the case.

Would not a court of circuit have greater facilities of obtaining evidence than any one single person?—I should doubt whether it would always by a question of evidence; or frequently the question would be one in which the evidence could be easily produced by the surveyors employed. The difficulty lies in adjudicating fairly between the parties, that is, of pronouncing efficiently as well as fairly upon the mixed question of law and fact that would have to be decided.

Supposing a case of difference between the arbitrators to arise, it would not be possible for the court to take the dictum of one arbitrator against another arbitrator; and in such a case of difference additional evidence must be required to corroborate the case proposed or disputed by one or the other?—I should have thought that the court itself would have been the best party to pronounce upon a question of that kind, so long as they have the evidence before them that both the surveyors had acted upon.

Then you would take the evidence of the two surveyors as indisputable?—I think that, in the majority of cases, the evidence would be admitted as to the facts. The difference would be for the opinion of the referee.

The question supposes a case where a difference arises upon the value of an allowance awarded by one arbitrator and disputed by the other?—There must in that case, I presume, be further local evidence; but I think that those cases would be the more rare.

Are you aware that the system of making awards is become very undefined in cases where compensation is sought under the custom of the country?—Yes.

And where the system of making compensation under awards is undefined, are not those the places where, on dispute arising, it is most eminently necessary to require local evidence?—No, I have not viewed it so. It has appeared to me, in the cases where awards have been insufficient, it has been partly through the incompetency of the surveyor to pronounce both upon the agricultural question, and upon the legal question.

Are you not aware that the system of framing awards has become exceedingly loose in some cases, and that the award has been given in the aggregate, without the items constituting that aggregate being specified?—No, I have not heard of that as common.

But supposing what has been stated to be the case, would not local evidence of the value of the improvements be most important to a just view of the case?—It would be necessary.

And where it was necessary, would not there be greater facilities for producing that evidence before a court on circuit, than in any single court?—I think not. There would be more expense in attending it than a local court; but I think the evidence of the same parties would be obtained as effectually.

Would not there be more expense in summoning those parties to any local court, than allowing their evidence to be taken before a court which, by being on circuit, would come to their neighbourhood?—The expense might be less if it were taken on circuit; but there are circumstances attending a circuit that would make it less satisfactory in other respects. There would be a degree of hurry attending upon it, and the time and attention of those who were employed are very much engaged by the press of business that takes place at a town upon the circuit.

Does not that same objection apply to all the business now arising on circuit?—To all references that arise.

And you think that that inconvenience would counterbalance the additional expense and inconvenience of summoning parties to give evidence from all districts of the country before one local court?—I think it would, because I think that a general board would be so much more capable of pronouncing upon the question than any board that could be constituted at the assizes.

The question refers, not to the capability of the land, but to the comparative expense of conveying and examining parties in the districts, or the summoning them to the central board?—There might be more facility in the mere collection of evidence upon the circuit.

Mr. Bouverie.] You were understood to say, with regard to those alternative improvements, that you would apply the same rule to them as in the case of fixtures?—I would apply the same principle.

Is not there a strong distinction between the two in this respect, that one is removable and the other is not? In the latter case it is removable only by being less permanent; it can only be taken away by the crops being taken off the land.

In the case of the fixtures the tenant upon going out would have the alternative of removing them, or in the case of the landlord dissenting, claiming compensation at his hand?—Yes.

In the case of the improvement of the soil the tenant has no means of removing at all?—No.

What provision do you make in case the landlord refused his assent, and yet the tenant made the improvements; in that case would you allow the tenant to recover against the landlord for improvements made against the consent of the proprietor of the soil?—No; I should in all cases require notice to the landlord of an expensive improvement.

Notice to be followed by the landlord's consent?—Yes.

In the case of those improvements, would you make the consent of the landlord holding a limited interest binding upon remainder-men and reversionists?—Yes.

Making it a liability, in point of fact, running with the land?—Yes.

Mr. Henley.] Is there anything, in your judgment, that would prevent a tenant, holding under a landlord having a limited interest, securing the advantages you think he ought to have by his agreement with his landlord?—There is nothing to prevent it; I am not aware of anything.

If persons having limited interest were enabled to do that by legislation which the fee-simple landlords could do, the tenant would be effectually secured?—I think so, so far as the permission of the landlord, which I presume would be taken, would go, it would apply in both cases.

That is to say, the power to make an agreement in the fee-simple landlord would be sufficient, and therefore, having a limited interest to secure the heirs, he ought to be secured by agreement?—Both would have the power of doing so, in that case.

Can you point out any advantages, and if any, what, that would accrue by legislative interference instead of leaving the parties to secure that right by private agreement?—I think so, because the opinion of individual landlords as to the advisability or otherwise of the improvements might not be always the most conducive to the interest of the community, or to the interest of their successors; they might be disposed to refuse their assent to improvements which were in themselves desirable.

But you were understood to say that you would not permit any improvements to take place, except upon notice to the landlord and tenant?—Yes.

Then you were rightly understood to say that you would not permit any improvements to be made at the charge of the land, without notice being given to the landlord, and his consent first had and obtained?—Yes.

If his consent is first had and obtained, why should not he be equally competent to do the same thing by agreement?—My only reason for requiring his consent at present is, because there is no other party to pronounce upon it but the landlord; there is no other decision that could be got as to the advisability or otherwise of the improvement, except that of the landlord himself; but I think that a body capable of judging on the question of agricultural improvement could be depended upon for giving a useful opinion upon the subject more than an individual who might be influenced by various reasons for refusing his assent to improvements, which in themselves might be desirable.

You were understood to say that those improvements ought not to be allowed to be made without the previous consent of the landlord?—I think under present circumstances, that it should be obtained.

Under the circumstances which you wish to create by law, would it be necessary then?—I propose a board that the tenant could refer questions to of that kind.

Can you point out any distinction why parties having a fee-simple interest cannot secure to a tenant, or a tenant secure from such parties the advantages you think they ought to receive?—I think that a tenant should have the power to do so, unquestionably.

Why cannot a tenant secure, from the landlord having the power, those advantages which he ought to receive in his tenancy?—He has no power to compel the landlord to make any special contract with him to that effect.

Is there any power now by law to compel a landlord to let him a tenement at a certain rent?—No.

Is not the rent as material to the tenant as the condition?—Yes.

How would you separate in principle the compelling a landlord to attach conditions to a tenancy, and not compel him to let him have it at a certain rent; what distinction in principle would that make?—All that I should imagine was required beyond the power of the landlord who has the estate in fee-simple would be, that a tenant should have some means of referring the question to a tribunal that is capable of dealing with it.

Do you mean to refer it at the commencement of the tenancy or at the end of it?—At the time when the improvement is made, and at the time when the valuation is made at the end of the tenancy.

Then is it your opinion that in principle the owners of tenements and the persons renting tenements, instead of making their own agreement, should be obliged to go to some court to fix the conditions upon which the tenancy is to take place?—No.

How do you separate in principle the point to which you would go in taking this larger step?—By the constitution of a board who were capable of entertaining questions relating to agriculture, there would be a means of reference for a tenant, in order to enable him to obtain the opinion, and to have the question pronounced upon, for which he has at present no resort at all, as against the mere opinion of the landlord of the advisability or otherwise of the improvement.

Then, according to your judgment, some tribunal should be constituted somewhere, that is to dictate the terms of holding between landlords and tenants in England?—I think that as there are evident difficulties in the way of direct legislation for questions relating to landlord and tenant, and as there is at present a great want of remedy on both sides, both as against the tenant for bad husbandry and as against the landlord for confiscation of property invested by the tenant, there is evident room for the establishment of a tribunal which would be able to pronounce upon such questions more efficiently than the courts can now do.

Confine yourself, if you please, to the the commencement of the tenancy, in order to go step by step to see how the tenancy is to begin. How would this tribunal act at the commencement of the tenancy in settling the terms between the landlord and the tenant?—That would not be required.

Then the Committee were wrong in understanding that there was to be any reference to this tribunal in settling the terms at the commencement of the tenancy?—Yes.

If a landlord and tenant had entered into a contract upon certain terms, which they were both satisfied with, is it your opinion that the contract having been so entered into, any tribunal ought to step in and vary that contract?—I think that land is a species of property in which the whole community have an interest, and that there should be a means of referring from the capricious opinion of the owner of it, or from the difficulties under which the owner may be, which disables him from making such an agreement with his tenants as prevents the tenant from being able to make the greatest produce from the soil. I think that such an interference could only be justified upon peculiar grounds, such as the interest that the community have in the production of the soil.

The tenants of Lincolnshire have a certain mode of cultivating their land, and a Lincolnshire tenant and a Lincolnshire landlord having made an agreement that the relations between landlord and tenant are to subsist in certain modes, conformable with that custom and practice, you would give power to a court, sitting in London, at the termination of that tenancy to upset what they had agreed upon, and to introduce what might be the custom of Scotland, or some other custom which this court thought more conducive to the public interest?—No; it would be the business of such a court to examine into the customs of the kingdom, and to endeavour to decide questions between landlord and tenant in counties and districts where the customs are now bad, according to the evidence obtained of the customs which existed in the best farmed districts; just upon the same principle as the Board of Agriculture collected the evidence of all the different customs which existed in the different counties of England, and brought them together into one mass, for the purpose of comparison and ascertaining what were the best.

Then if this particular board was of opinion that the custom of the county of Kent was superior to that of Lincolnshire, the Lincolnshire landlord and Lincolnshire tenant, in spite of their agreement, would find themselves dealt with by the custom of the county of Kent, not that they had mutually agreed to abide by; is that your opinion?—I think that in districts where customs are at present bad, it would be productive of good; first of all, that the knowledge of good customs should be spread to them by means of the decisions pronounced by competent parties. I cannot see that there would by any hardship upon any party by the substitution of a good custom for a bad one.

How would you constitute this board, and of whom ought it to be composed, in your judgment?—That is a question I am not prepared to answer; the ground on

which I imagine that benefit would be derived from a Board of Agriculture is, that a difficulty appears to me to exist in the way of direct legislation for the purposes that are classed under the name of tenant-right.

You have told the Committee that this board should have the power to do away with the customs they thought bad, and instead of that to settle the question between landlord and tenant on the customs they thought good, without reference to the contract entered into between the parties. Did you mean that to be understood?—No, I do not think I have gone the length of that, but I have said that on this board being constituted, it would be their business to collect evidence of the different customs of the different counties, and that it would be a matter of further arrangement how far they would themselves be able to extend a custom which they considered good to those counties in which bad customs at present exist.

A Lincolnshire farmer and a Lincolnshire landlord having made a contract, the tenancy being terminated, on their applying to this particular board to decide the terms upon the determination of the tenancy, it would be open to that board to decide other than in the terms of the contract. Your opinion is requested upon that point?—I can hardly venture to define what the jurisdiction or what the power of the board should be; it appears to me to be the only mode of getting rid of the difficulty which seems to exist in the way of direct legislation upon questions relating to agriculture.

Do you think that the tenantry of Lincolnshire or the tenantry of any other county, having entered into agreements with their landlords, or living under the customs of the country without agreement, would submit for one moment to have their interests decided upon by a board in London, upon a principle that the county of Kent or Scotland or any other district acted upon, but which they were totally ignorant of?—I think the tenantry of Lincolnshire, of all others in the kingdom, would least require it; but the evidence of a good custom prevailing in Lincolnshire is the best proof that such customs are required to be known in other counties.

That is not exactly an answer to the question put to you. You were asked whether you think the tenantry of Lincolnshire, or of any other county, having made agreements with their landlords, or living under the custom of the country, would consent for one moment to have their interest dealt with upon the principle of other customs, of which they were entirely and wholly ignorant? I can hardly give an opinion upon such a question. I think that in the districts I am best acquainted with, the tenantry would be glad to have some parties to refer to, who should have authority to pronounce, and who would have knowledge of agriculture sufficient to make their decision of value in questions that might arise between outgoing and incoming tenants, with regard to compensation for improvements that they had made.

You think that the tenantry of England would prefer that, sooner than being dealt with under the customs they have lived under, or the agreements they themselves have made; is that your opinion?—Not of the tenantry of England. I cannot pronounce an opinion so wide as that.

What district of tenantry do you think would so elect?—I think that in districts where the customs are very indefinite and uncertain, the tenantry would themselves be glad to have the customs decided, and authenticated if good, as being the custom of the district, and that it should be understood that those were the terms on which their holding was regulated.

Speaking now of something that is to be done subsequent to the holding (not anterior to it, for you have said that you did not mean to apply that authority to the commencement of the holding), can you name any district in which you think, from your acquaintance with it, the farmers of that district would like to have their interests dealt with by a board sitting in London, upon principles that they did not know of, and that might be exactly contrary to the agreements which they themselves have made?—I do not know whether the farmers would themselves prefer it; but I think that there are many districts in which benefit might arise to them from the alteration of the custom that exists.

Are you aware at all of the custom of the county of Kent?—Not at all.

You do not know that they farm more extensively on a tenant-right, that requires a larger outlay, than the county of Lincoln?—No; I thought the Lincolnshire tenant-right was the best.

You do not know that the coming-in in Kent is more expensive to the tenant than the coming-in in Lincolnshire; that there are so many things paid for?—No.

Do you think that Kent, being a county where the cultivation is considered high, that the Kentish farmer would like to be cut down to a lower scale?—No; but my idea of an Agricultural Board is, that of a board that should compare the different customs of different counties, because I apprehend that the customs in well-farmed districts are best adapted to the district. I have no wish to see the custom of one district imported into another hastily, but merely to have the custom as between the outgoing and incoming tenant more distinctly understood than those customs at present are, and improved if necessary.

And that and other important matters being in your opinion proper to be subjected to a central board, you have not formed any opinion at all of how that board should be constituted, or of what class of persons?—Yes, I have formed an opinion of it, though not maturely.

Will you be kind enough to state what that opinion is?—I have formed it, generally, by reference to the Board of Agriculture that existed formerly.

How was that constituted, and of what class of persons was it composed, and what was the number?—That indeed I am hardly able to give. I only know that Sir John Sinclair was the president, and Arthur Young the secretary of that Board. They undertook the collecting of the different customs of England. It was a very valuable work, and has been made extremely useful as a reference by having been condensed into the work that now exists, the volumes of British Husbandry, and incorporated in the law-books on landlord and tenant.

You have rather a sort of abstract idea of a board composed as Sir John Sinclair's Board was, some 30 years ago, than coming to a more defined notion of it?—Yes.

That Board expired from mixing itself up with political agriculture, did not it?—I do not know. I understood that it had expired because it had attained its objects in having collected the customs; it is so stated in the introduction to the volumes of British Agriculture.

Mr. NEWDEGATE.] Your whole assumption that the constitution of this board would be justifiable has proceeded upon the supposition that the community has a peculiar claim upon the land for its good cultivation. Now that the community have decided that they will not depend upon the land, is not that claim invalidated, since they have determined to derive their supplies from other sources as well as England?—That influences the view; but at the same time I consider that it is for the benefit of the community that the food of the country

should be grown in the country, rather than that it should be imported.

But the community have decided that they will not take any means to secure themselves that advantage; therefore is not the presumption upon which you have constituted this board invalidated by the acts of the community itself?—The advantage is not secured to them by law as formerly; it is naturally secured to them, because I conceive that it is a greater advantage to the country that its food should be grown in the country than imported; it must be imported if it is not grown, to the detriment of the home labourer.

But the community, through the Legislature, have said that it is no longer to be secured by legislative enactment, is not that the case?—Yes, but still it does not go the length of saying that food grown at home is not grown with more advantage to the community than if imported from abroad.

The community have decided that they will not trust to that?—I do not understand the question as negativing the entire claim upon our own soil.

The community, by determining that they will draw supplies from all the world as much as from their own production, have yielded any claim upon their domestic production, which was certainly based upon the peculiar favour shown to their domestic production; is not that the case?—I can only repeat my former answer. I think not.

CHAIRMAN.] You have stated your opinion, as a lawyer, that a landlord being a tenant for life is not empowered to make agreements for compensation binding upon his successor?—Yes.

You have also answered that the tenant of a fee-simple is empowered to do so?—Yes.

Can you form any estimate what is the proportion of property in the country held under marriage settlements, and other settlements, to that which is held in fee-simple?—It is very large indeed.

About what amount would be your estimate of the proportion?—I should say, speaking at a very rough guess, more than two-thirds.

Where land in fee-simple is mortgaged, would not that also impair the power of the owner to charge the property?—It would not impair his formal power of doing so, but it would subject his powers, to the extent to which he charged the land, to the necessity of giving notice to the mortgagees to that effect; but, as a matter of practice, I consider it would not prevent the power in the same manner as the fact of his having only a life interest.

Mr. NEWDEGATE.] The case might occur where a mortgagee was in possession; supposing the mortgagee in possession, would you give power to recover compensation for improvements against him?—I think I should invest him with the same powers as a tenant for life, or as the tenant on whose behalf he held the land. But this would be a fair case for reference, by the tenant.

That would again make the claim for compensation run with the land?—Yes.

March 20th, 1848.

MEMBERS PRESENT.

Earl of Arundel and Surrey	Mr. Hayter
Mr. Bouverie	Mr. Henley
Mr. Burroughes	Sir C. Lemon
Mr. Colville	Mr. Moody
Mr. E. Denison	Mr. Pusey
Mr. Tatton Egerton	Sir J. Trollope.

PHILIP PUSEY, ESQ., IN THE CHAIR.

The Evidence of Mr. EDWARD WOOLLETT WILMOT.

CHAIRMAN.] Are you at present an occupier of and?—Yes; I occupy a small portion of land.

To what extent do you occupy?—To the extent of 100 acres.

Where do you reside?—At Etwall, in Derbyshire.

Have you now the management of any properties, or have you dealings as a valuer?—Yes, I have the charge of large properties.

In what counties?—In Nottinghamshire, Derbyshire, Leicestershire, Lancashire, and Cheshire.

Are you well acquainted with the law and custom as between out-going and in-coming tenants in Nottinghamshire?—Yes.

Have you the management of large property there?—I had. I have now several, but not so large an extent as I had a few months ago.

Would you be so good as to state to the Committee what is the tenant-right for improvements, payable to out-going tenants in Nottinghamshire?—The custom of the country does not allow anything for drainage, I believe, nor for buildings. For bones and other artificial manures, and oil-cake, you would have certain proportions allowed; it is the custom on certain estates to allow for drainage, but not through the country generally.

Nottinghamshire may be divided broadly into two different kinds of soil, may it not?—Yes.

Is not the south-east of Nottinghamshire rather strong soil?—Yes, and the other light.

The western side is chiefly light?—Yes.

Have great improvements been made in the western side of Nottinghamshire within your recollection?—Yes.

What was the state of that part of the country before it was improved?—A great deal of it was covered with gorse and ling, and produced nothing.

In what way have those improvements been effected?—Principally by the use of bones and other artificial manures.

What amount of compensation is the out-going tenant entitled to for those artificial manures which he has employed upon his farm?—Generally one-third; there is an allowance for three crops, deducting a third each crop.

Whatever may have been the intervening crop, the expenditure in bones is spread over three years?—Yes.

What is the compensation for oil-cake? Where the manure belongs to the tenant, he would get his compensation in the extra price of the manure; but where the manure belongs to the landlord they usually allow one-fourth of the oil-cake to the tenant.

Is there any allowance for rape-cake?—Yes.

What is the allowance for rape-cake?—The same as for bones.

The compensation for rape-cake is divided over three years?—Yes.

Is rape-cake much used as a manure?—Yes, it is a good deal used.

In one instance has not as much as half a ton of rape dust to an acre, at the price of seven guineas a ton, been used for turnips?—Yes.

Is that a very unusual case?—No, I should think not among good farmers.

When rape dust is used to that extreme, are any bones employed?—No, unless the land is very poor indeed.

You have already stated something generally of this part of Nottinghamshire; a large portion of it was little better than common and warren?—Yes.

It has been stated in a prize report of the Royal Agricultural Society, that the produce of that part of the country generally has been doubled, trebled, and in some instances quadrupled; are you of opinion there is any exaggeration in that statement?—No, I think not.

You say in some part of the county an allowance has been made for drainage?—Yes.

What allowance has been made in those instances?—For shallow draining seven years, deducting a seventh each year.

What do you consider shallow draining?—Three feet.

And what is allowed for deeper draining?—They would allow ten years.

What do you consider deep draining?—Ten, twelve, and twenty feet.

Do you know whether the previous consent of the landlord is required before the drains are put in?—In some instances the tiles are given, but generally they are put in under the superintendence of the landlord.

Then with regard to the general compensation to outgoing tenants for acts of husbandry, is there any prevailing custom in Nottinghamshire?—Not more so than in other counties. I think the common rule is seed and labour, and in some instances they have the way-going crop; that is not general.

Before entering upon that part of the subject, is it your opinion that in the eastern part of Nottinghamshire where a good deal of drainage is required, in those cases where the landlord is unable or unwilling to undertake drainage, that if the tenants enjoyed the tenant-right you have described as existing on some properties, they would be likely to engage in it? It would be a great encouragement to them.

Is it much wanted in that part of Nottinghamshire?—Yes.

Is there a great deal of land undrained there?—Yes, a great deal.

Judging from the operation of this covenant for drainage on some properties where it exists, are you of opinion that tenants would avail themselves of it on other properties?—Yes; if it was an understood thing that they could claim it, they would very frequently take advantage of it, where they do not now.

Would it give a great increase of employment to the agricultural labourers?—Yes, very great.

To what extent do you think it would increase the productiveness of the soil?—That varies very much with the land; but in a great many instances certainly a third more, and in some instances a half more.

As to the white crops?—Yes.

Would it render some of the light marls, not now capable of bearing turnips, fit for turnips?—Yes, they will bear turnips if properly drained.

At present they are not fit for turnips?—No.

They are not such obstinate clays there as in some parts of the district?—No, but in some instances in the county they will grow turnips well.

That would lead to a great increase in the production of meat?—Yes.

To return to the subject of ordinary payments between outgoing and incoming tenants; when is your time of entry in Nottinghamshire?—At Lady day generally.

State if you please, in general terms, what are the acts of husbandry?—At the Lady-day entry all the labour, the rent, and taxes, on the turnip fallows, and any ploughing done; and, of course, seed labour on the wheat crops.

Has the tenant the way-going crop?—In some instances he has; in a great many instances they have been redeemed; the landlord has bought them.

Is there compensation for naked fallows?—Yes; the rent, taxes, and labour.

Has he any compensation for half fallows?—He would have the labour, but no rent or taxes upon them.

Are the half fallows an amount of compensation given to the tenant for naked fallows, though the intervening crops are taken?—No; he would have nothing for half crops generally; in one district, bordering upon Yorkshire, they allow half fallows.

Sir J. Trollope.] Are any of the landlords in Nottinghamshire in the habit of giving tenants tiles for drainage?—Many of them.

What compensation would the tenant receive in those places, on giving up his farm?—That varies; but I think he ought to receive the benefit of his labour.

Would he be entitled to a remuneration for labour for seven years?—Yes, deducting one-seventh each year.

When he has been only at the expense of the labour?—Yes, when he has been only at the expense of the labour.

How many crops of corn would he have taken in those seven years?—Four or five.

Would not those crops have repaid him for his labour?—Hardly.

Are any of the buildings done by the tenants in Nottinghamshire?—In some instances materials are given; in others the landlords make the buildings, and in others nothing is found.

The tenant finds the whole?—Yes.

In those cases where the landlord finds the materials, do you consider the tenant entitled to compensation on giving up his farm?—No; unless he has expended a large sum, and the landlord turned him out at the end of one or two years; then he would be entitled to be allowed something.

Have you known such cases where they have been allowed?—Yes.

Generally speaking they would receive nothing?—No; they could not legally demand anything.

Are not the buildings, the greater part of them, done entirely by the landlord in Nottinghamshire, on those estates which you have under your management?—No; some repairs are done.

Barns and stables?—Yes; the tenants very often build their own, but when they do build their own they build them on wood, so that they may be removed.

They are not placed on the freehold?—No; as they can receive nothing on quitting, they always object to making permanent buildings.

Do you know in that part of the country whether the away-going crops are taken by the tenant?—Yes.

Is not that the unimproved open field system of husbandry?—Yes.

They grow wheat after fallows?—Yes.

Is that a case for compensation; taking that system of husbandry, do you consider it a good system of husbandry to have a naked fallow and wheat after it?—No.

Yet you would allow compensation for it?—If a man has paid for it on entry he would be entitled to be paid for it on going out, unless he received compensation.

Mr. Colvile.] Would not the effect of the drainage of the land be to do away to a considerable extent with naked fallows?—Yes.

Sir J. Trollope.] Are those strong lands capable of being usefully converted into turnip lands, such lands as sheep could afterwards eat off the crop?—Yes.

In a season like the present?—This is a peculiarly wet season; land that is usually sound will hardly bear a sheep now.

In ordinary seasons would those lands be capable of being made such that sheep could be penned upon them?—A great many could.

What district are you speaking of; is the land capable of being drained and then bearing turnips?—Tuxford, and Wellow, and Rufford.

Were you once agent for the Rufford estates?—Yes.

For how many years?—For two years.

Are you agent for other estates in Nottinghamshire where the land is of a similar character?—None of that strong land.

On those other estates of strong land, do not the land-

lords usually provide a tile yard, and give the tenants tiles?—They do in many instances.

On the estates you have the management of, was there no encouragement given to drain?—Yes, Lord Scarborough constantly gave encouragement when I was with him; he had then recently come to the property, and was using a brick yard for his own purposes; since then he has given many away. The Duke of Newcastle had three tile yards, and gave away all that were made.

Was any charge made to the tenants for those tiles?—No.

Was any per-centage put upon the rents?—No.

Was the drainage done under the superintendence of the agent, or by the tenant, without supervision?—By a man appointed by the landlord.

Did he set out the drains?—Yes.

And was nothing charged to the tenant?—No.

They having the full benefit of the tiles, and doing the labour themselves, you think they ought to be remunerated?—Yes, for the labour.

Mr. HAYTER.] What is the difference of price of the drainage per acre?—That depends very much upon the depth and description of the soil.

You say that in all cases, whatever the depth, the landlord never receives any advantage?—I think that where the lands want draining, and the landlord is not in the habit of finding draining tiles, and he sets up a tile yard, it would be very fair for him to charge a per-centage for his tiles, and the tenant would be very glad to pay it.

Mr. HENLEY.] How long have you been acquainted with the county of Nottingham?—Twenty-two or twenty-three years.

And when you first became acquainted with it was the custom that you have spoken of, with respect to the bone manure, in practice then?—Yes.

Do you know yourself anything of the origin of that custom?—No; only what I have heard. I went to Nottingham in the year 1827, and then it was generally in use.

You cannot inform the Committee of the origin of it?—No.

Mr. BOUVERIE.] Were allowances then made for bones or rape-cake?—Yes; rape-cake was not in general use at that time.

Sir C. LEMON.] You have mentioned that where the tenants erected buildings themselves, they were constructed in that way that they might be removed?—Yes.

In what way were they constructed to preserve that right?—On wooden posts.

And is that determined by the custom of the country, or the general law?—I believe by the law.

Sir J. TROLLOPE.] You once farmed on the borders of Leicestershire and Rutland?—Yes.

Did not you drain a good deal there?—Yes.

At Pickwell?—Yes.

And you broke up the soil from pasture to tillage?—Yes, some hundred acres.

Were a great many tiles found you, or did you find them?—I found them at my own cost.

You broke up the land from ancient pasture to tillage?—Yes.

Would not the one crop, in that case, pay you for the expense of the drainage of the land?—Yes, it would.

Is land broken up from ancient pasture and put under tillage husbandry profitable to the tenant?—Yes.

Would you think you ought to be entitled to seven years in that case?—No.

In your case did you receive compensation?—No.

Did you give up that farm a very short time afterwards?—Yes; and I never received a sixpence; the custom of the country did not allow anything either for artificial manure, drainage, or buildings.

You are speaking of your own farm?—Yes.

Had you laid out money in building?—Yes.

And in artificial manure?—Yes; and in fencing, building, and inclosing the land.

Without receiving one farthing?—Yes.

How long did you occupy the land after you broke up the pasture land?—Some five years, some four years, and some only three years.

Were you not reimbursed in those three or four years?—No; there was a great deal of fencing done.

Was not any wood found for you?—I was allowed to cut down some old trees.

And that was more expense, perhaps, than the advantage you derived?—Yes.

Mr. DENISON.] In what part of Nottinghamshire do you speak of buildings being placed upon the wood?—On the Duke of Newcastle's estate I do not know a farm scarcely that has not some of those buildings.

Generally speaking, would you say that it is the custom with regard to buildings in Nottinghamshire, that they are done by the tenants?—No; in many instances the landlord finds materials; in others he does them altogether, and in others he does nothing.

Should you not say generally that the buildings were put up by the landlords?—The houses and barns are; but any increase of the buildings, in many instances, is made entirely by the tenant.

In those cases, perhaps, you would be speaking of lands that are brought out of heath and so forth into this improved cultivation?—Yes, and in others where the buildings are not sufficient.

As to the agricultural custom of tenant-right, has that changed within your recollection in Nottinghamshire; that is, has it increased with the increasing improvements in scientific farming?—I think it has.

You have instanced the case of rape-cake, which you say, when first you were acquainted with the county, was not used, and therefore there was no allowance for it?—No; it would be at the option of the valuer to have allowed it; it has now come so generally in use, that it has become established into a custom.

Is it your opinion that, in the best farm districts of Nottinghamshire and Lincolnshire, and other counties that you are acquainted with, that what you might call an extended or liberal tenant-right has increased with improved farming?—I think it has.

And do you think that has been in some degree the cause also of improved farming?—I think farmers improve with much greater confidence.

Do you think, from your knowledge of these matters, that there would be any great difficulty in making a fair estimate of tenant-right, supposing that any tenant-right of this sort was to be prescribed by law?—It would be difficult to make a tenant-right to suit all lands.

Do you think that there would be any great difficulty in counteracting frauds?—It is difficult to keep men always honest. One great difficulty is in the valuer. Some men as tenant-right valuers for an incoming tenant on the Monday will say one thing, and for the outgoing tenant on the Wednesday they will say just the contrary; and as long as you have such men to deal with, there will be always a great deal of trouble in getting correct valuations.

Do you know whether on the boundary, the northern part of Nottinghamshire and Yorkshire, there are very extended tenant-rights?—Yes.

Are you aware of very great difficulties that have arisen in making fair estimates of those tenant-rights?—Yes, I have heard of such difficulties.

Can you suggest any mode by which practically those difficulties could be overcome or moderated?—Only by agreements.

But with regard to valuers, how are you to get over

the difficulty of the machinery of which you have spoken?—As long as men will employ unfit men as valuers, of course they will act.

But the men whom you call unfit would be very fit for a particular purpose?—Yes: then the landlord should take care that a man of that sort was not employed.

You could not prevent the outgoing tenant from naming his valuer, could you?—If there was a man whose character was such that I could in no way trust him, I should insist upon the tenant not employing him.

How would you be able to carry that into effect?—If an objection was not made before quitting, you could do nothing: before notice was either given or received, you might easily do it. I know one instance of an estate where two men are not allowed to value. They had been found as valuers not acting as they ought to do, and the landlord put in all the agreements that they were not to be allowed to value on that estate again.

In the districts which the question refers to, where the tenant-rights have run over several years, has there been great difficulty in assessing those tenant-rights?—Yes.

For the purposes of every reasonable encouragement to tenants on the one hand, and for justice on the other, do you think it important to limit the term of years over which tenant-right should run, as much as possible; as much as justice would permit?—Yes, certainly.

Could you describe to the Committee the tenant-right that prevails in the part of Yorkshire to which allusion is now made?—I do not know that tenant-right particularly, other than what I have heard, that they allow the half tillages and the whole tillages; of course that increases the number of years that the tenant would get his allowance for bones for the three years, and then he would come for the further allowance for his half from that.

But you know enough of it to be able to speak with confidence, that very great difficulties have arisen in assessing it?—Yes, I have heard valuers state that they have a very great difficulty in determining the value fairly and justly.

Do you think, under the sort of tenant-right of which you have now been speaking, that with regard to bones, oil-cake, and rape-cake, there would be not much difficulty in settling those points?—No; very little difficulty. I think there is very little difficulty now.

Do you think that an extended tenant-right, such as you have been speaking of, for all main improvements, would promote superior agriculture?—Yes; I think it would give more confidence, and encourage people to spend more money.

Do you see visibly that in the districts where the tenant-right is most contracted, the farming has been worse?—Yes, I think so. In Leicestershire and Derbyshire there is little or no tenant-right, and the farming is generally bad; and the same in Lancashire and Cheshire.

Mr. Bouverie.] Was the allowance you speak of for drainage in existence when you first went to reside in Nottinghamshire?—I suppose so, on those estates. I do not think it would be enforced as a custom of the country, but only as the custom of certain estates.

What is the ordinary tenancy in those districts you speak of?—From year to year.

Under written agreement or verbal?—It varies. In many instances they have written agreements; in others they are merely verbal ones.

Are you familiar with the form of any of those written agreements?—Yes, I have seen many of them; there are a great many forms of agreement.

Are there special agreements with reference to tenant-right ordinarily introduced into them?—Yes, generally.

With respect to bones and rape-cake and rape-dust?—Yes.

Are you quite clear that in case of there being no special stipulations in those instances, those allowances would be established for bones and rape-cake?—In the county of Nottingham, any jury, I think, would award them.

Do you know whether, as a matter of fact, that has ever been so?—No. I was on an arbitration case several years ago, where the arbitrator allowed them: it went to the assizes, and the judge said it had better be referred.

Was that a case you were interested in?—I viewed the premises, and gave evidence upon the case.

What would you propose to give as tenant-right? What class of claims do you think should be established—those you have at present, or less or more?—I think three crops for the bones, and two I think sufficient for the rape-dust or guano. For the drainage, seven years I consider a sufficient allowance.

And for the cake a quarter of the bill?—Yes, a quarter of the bill for the cake.

Would you apply that to all classes of soils indiscriminately?—Yes, I think it might be safely done to all soils; but as to buildings, the tenant ought, if he makes a substantial building, to be paid for it, or allowed to remove it. It would be hard upon the landlord to make him take any fancy buildings the tenant might choose to erect; but at the same time the tenant ought to be allowed, if the landlord or incoming tenant will not take them, to remove them.

How would you apply that to the case of the improvement of the soil, if the landlord objected?—The improvements on the soil must be allowed for.

Are the bones laid down simply as bones, or mixed with anything?—Where they are mixed with sulphuric acid, I should not allow so much.

Mr. T. Egerton.] Would you allow the same for boiled bones and unboiled?—It would be difficult to make a distinction; the unboiled bones deserve it more, because they last longer.

You are aware the price of the one is just double that of the other?—Yes.

Mr. Bouverie.] Do the arbitrators take the invoices of rape-cake as the ground of their proceeding?—Yes.

Do they consider that conclusive upon them?—They get what proof they can; they make inquiries among the labourers, whether the bones have been applied to the land; and they have the bills and receipts to show that the bones have been bought and paid for.

Mr. T. Egerton.] You were asked respecting certain portions of Nottinghamshire and Yorkshire; you alluded also to Derbyshire and Lancashire and Cheshire. You are a good deal acquainted with Derbyshire husbandry, are you not?—Yes.

And Lancashire?—I know something of Lancashire.

You cannot speak with the same confidence as to Lancashire as you can to Derbyshire?—No.

In respect to Derbyshire, there is scarcely any tenant-right there?—No.

The customs of the country are very few?—There is the labour and seed, and the fallows.

Are there leases generally granted in Derbyshire?—Very seldom.

How is the drainage performed generally? by the landlord, or partly by the landlord and partly by the tenant conjointly?—They vary. Sometimes it is done in both ways. In Derbyshire, where the landlord does it, he generally charges a per-centage.

What is the general charge?—Five and six per cent.

Is that with the pipe-tile or stone draining?—It used to be with stone; now the pipe-tiles are a great deal used.

Mr. Henley.] You have stated that you recollect the commencement of the rape tenant-right in that part of the country you have spoken of?—Yes.

Do you recollect the commencement of the tenant-right in oil-cake?—No.

That was before your time?—Yes.

But by the use of rape it has become a custom, has not it?—In Nottinghamshire it has.

You have spoken of three customs—one in the north of Nottinghamshire, that you are not so well acquainted with, near Doncaster, as to tillages and half tillages; and you have said that seven years should be allowed to drainage. Do you know the custom of Lincolnshire as to the number of years allowed there for drainage?—I am not aware that in Lincolnshire drainage could be insisted upon, except in certain estates.

Do you know the time there, whether it is five years or seven years?—Lord Yarborough allows, I think, seven.

Suppose in that part of the kingdom seven years was the custom, and in other parts five years is the custom, and taking the instances of those tillages and half tillages, how would you propose by law to deal with those customs which are so different?—It would be very difficult to deal with them by law.

Can you suggest any mode by which those varying circumstances could be dealt with by law?—No, only by agreement.

Can you state to the Committee whether there is any difficulty, and if any, what difficulty, in tenants securing those rights that are desirable to them to have, by agreement with the landlord, where the landlord has the fee simple?—I can see no difficulty, if the tenant and landlord agree.

Can you state any reason, and if any reason, what, why there would be a greater advantage to the tenant to have it by legislative enactment, provided it were possible, than by securing it by agreement?—The only advantage would be, if it were legally fixed upon the land, there could be no mistake; the other being a matter of bargain.

The circumstances of each differing in different parts of the same county, and differing in each county, is it, in your opinion, easy to make a legislative enactment to suit all counties?—It would be very difficult.

Is not it safer to leave the tenants to make the bargain, where there is no difficulty?—Yes; they ought to look after themselves, and make their own agreements.

Where a landlord has only a limited interest in the land, in your opinion would it be a great advantage to enable him to secure a reasonable tenant-right running with the land to bind his successor?—I should have thought that the agreement for the tenant-right would bind his successor without an enactment.

Speaking, not of tenant-right established by custom, but of any other tenant-right that the tenant might be desirous to secure, such as drainage, for instance, would it be in your opinion desirable, provided the landlord has not that power now by law?—Yes, certainly it would be desirable to give him that power; the same as it is a great gain to enable him to borrow money for drainage on an entailed estate.

Is it customary in the agreements as to tenant-right to consider the condition of the farm, speaking from your experience upon that subject?—Yes, it ought to be.

The question is not what it ought to be, but what is the custom?—Some valuers make a difference.

In your opinion, ought it to be made an element of valuation?—Yes, certainly.

In what particulars? in the repairs of buildings or the condition of land, or both?—Both.

Both ought to be elements in the valuation?—Yes, the dilapidations ought to be charged.

In that case, it ought to be a set-off against the tenant-right the tenant might have?—Yes.

That is your opinion?—Yes.

Is it the custom or habit of valuers to allow it, generally speaking, in your knowledge?—Valuers usually slip it over if they can.

Have you had much experience in valuing?—Not much in tenant-right valuing.

Have you had much experience in the change of tenancy upon land?—Yes.

You have stated that in some cases you have known tenants dispossessed where they have a right to expect to be paid that which they have not been paid?—Where there has been no custom, they have. I have known such cases.

Have you known any, and if any, many or few, cases where farms have been given up in a very dilapidated condition?—Numbers have been given up in a very dilapidated state.

Are the number of farms given up in a very dilapidated condition, more or less than the number of farms given up to the landlord where the tenant has had a right to receive something, in your opinion, that he has not received?—I hardly understand that question.

Are there more dilapidated farms given up, or more with unexhausted improvements in them that the tenant has not received anything for?—That varies very much in different districts.

What is the greater number, in your judgment, according to your own experience?—It is very hard to say. I should say on the clays generally the farms are given up in a bad condition; on the sands usually they are given up in a better condition, the majority.

On the sand, you say, the tenant has a tenant-right for his bones, his rape-cake, and his oil-cake?—Yes.

What other acts, then, may he have performed to benefit the sand land, that he would not have a claim upon the incoming tenant?—He may have put up fences, erected buildings, and drained his land.

Anything else?—He may have dug his land, for which he would get no recompense; and that might be a very permanent improvement, and would last four or five years.

Is the digging of land common upon the sand?—No; but there are many instances of it.

Ought he to receive anything for digging the land?—It would be but fair.

Is it so decided an improvement that it would be a great gain to the in-coming tenant, as well as to the outgoing tenant?—In many instances it would be.

Supposing a man to dig land so that it would not be an improvement, would it be right then to pay the outgoing tenant? No, certainly not.

Then it would be difficult to fix that as a general tenant-right? Of course it would vary, but it ought to be a matter of agreement.

Chairman.] Is any stronger soil brought up in this digging? The subsoil varies very much.

Mr. Henley.] Ordinarily speaking, upon the heavy lands of Nottinghamshire are the tenants men of abundant capital, or otherwise? Generally otherwise, I am afraid.

In letting farms is it difficult, or otherwise, to find men of abundant capital to take them? On the clays it is difficult to find men of capital to take them.

Generally speaking they are men of contracted and narrow means, are they? Men of capital do not like to go on the clay, if they can get a sand farm.

Of course if you had a heavy tenant-right, there would be the greater difficulties to men of narrow capital coming in? Yes.

If there were to be an extended tenant-right, what would be the effect of that upon the landlords in laying

out their own money upon the land? I do not see that it would make any difference.

Do you think the landlords would be as likely to expend their own capital upon the land in that case as they are now? Yes.

Do you think the knowledge that the tenant would have a claim upon the incoming tenant would not act upon many landlords' minds in inducing them to avoid laying their own capital out? Not in the tenant-rights that I have been talking of.

In matters of drainage and such matters, which you say are not now tenant-right? The drainage would not make any difference. I think if the landlord had a tenant who could not possibly expend the money he would find him tiles to help him.

With reference to buildings, do you think the landlords would be as ready to put up buildings as they are now, if the tenant could put them up and take them away? They might be matter of agreement.

What is the probable practice, is what you are asked? The incoming tenant ought to take all the improvements by agreement.

Supposing the tenant should have the power of taking away a building, would not one great inducement be taken away from the landlord to be at any expense of putting the building up? It would become a subject of agreement between the parties. If the tenant had money to enable him to do it, the landlord might not do it then; but with a man of contracted capital, who could not put up the building, the landlord would put it up himself.

Then, in spite of the law, he must contract and agree upon that. Supposing a law were to be enacted, that a man could carry away the buildings at the end of the tenancy, still he would be obliged to go to the landlord and ask him to put it up under agreement? Yes; a man taking a small farm with a small capital, cannot take the buildings under his charge; if the house tumbles down, he has not the money to build it up.

Then he must come to his landlord? Yes, but the landlord might say, The buildings are quite ample, you want no more: then if the tenant puts them up himself, it is hard if he has no power to remove them.

Then, therefore, the additional buildings the tenant would put up? Yes, he would put up good substantial buildings instead of inferior ones.

He being short of capital? Every man is not short of capital; we hope there are some farmers who have money.

The loss of removing buildings of that substantial nature would be very great? Yes.

It would perhaps be cheaper to a man to put up an inferior building, than to put up a substantial building and pull it down again? Certainly; but a man putting up a substantial building would say, There is a chance of the landlord or the incoming tenant taking it at a fair valuation; if so it would pay him for doing it.

Are the farms in Derbyshire generally a mixture of grass and arable land? Yes; in Derbyshire there is more grass than arable land.

Generally where that is the case, the cultivation of the arable land is not so good as in districts exclusively arable? In dairy districts the arable land is often farmed in a very inferior manner.

It perhaps may account for the inferiority of the husbandry, there being a want of tenant-right? Yes; I think in Derbyshire, if the dairy farmers had a claim for the use of oil-cake or artificial food that they bought, they would keep their cows better than they now do.

And the management of their stock? Yes; and so they would increase all kinds of manure, and be able to manage the ploughed land better.

Is the ploughing managed badly for want of the manure, or from the want of a good system of husbandry, or both? From both.

Which is the greatest want? Generally in Derbyshire the want of a good system of cultivation; they look too much to their grass land.

Are you able to suggest to the Committee any mode by which the Legislature could deal with the varying circumstances you have described? I do not know myself how the Legislature are to fix charges upon the land, any more than they would fix the rent upon the land.

Mr. Denison.] You have told the Committee that it is best for tenants to look after their own interests, and settle those matters by agreement? Yes.

On estates that have gone from father to son for many years, and where old agreements and old customs have existed, it is not very easy for tenants coming upon those farms to get new agreements made, is it? Some landlords will not alter an agreement; others are very anxious to do it, and I should hope they generally would be anxious to make an agreement to meet the wishes of a good tenant.

In the answer you made to a previous question, did you mean that nothing could be usefully done in this matter by law, that no Bill of a general nature would be serviceable? With regard to the buildings something might be done. The farmer might have the same protection as the tradesman has in that respect; if a tradesman erects a building for a steam-engine, or any building for carrying on his trade, he can remove it; the farmer cannot; the farmer does not therefore stand so well as the grocer or baker.

As to those claims for bones and so forth, do you think it would be possible for the law usefully to entertain those points or not? It would be a very difficult point, I should be afraid.

In the districts where those tenant-rights as to bones and other tenant-rights exist, do you know any case where manure has been led into the farm and has been allowed for? There are cases in which it is allowed for.

Would those be individual cases, or would they be under the custom of the country that prevailed in any district? I think the custom in part of South Nottinghamshire would allow it.

That stable manure led from the town should be considered as a tenant-right? He would not be allowed probably after the first crop.

But do you think, upon recollection, that you have known instances where that has been done? I think it was allowed in the arbitration case I mentioned; the land of Lord Chesterfield, at Gedley or Burton-Joyce.

Is there any reason, so far as the reason in this matter goes, why the manure bought in the town and led to the farm should not be allowed for as well as bones bought at a bone-mill? It ought to have its proportion as well as the other; not so much as bones, because it would not do good for so long a time.

Still, speaking generally, there has been no custom that has prevailed to give the right to that, as it has done for other manures? No.

On settling the tenant-right question, is that generally estimated by the bill paid, or how? By the bill paid, and the cost of the labour for putting it on.

Mr. Hayter.] With respect to the removal of the fixtures, you stated to the Committee that every building should be removed, assimilating the cases of agriculture and trade; that what the tradesman could remove the farmer should be able to remove? Yes.

Are you sure that a tradesman has the power of removing those fixtures? I have understood he could.

But whether that fact be so or not, you are to be understood to say, that by legislative enactment it might be provided that the outgoing tenant should receive compensation for the buildings he has erected for the pur-

pose of carrying on his business, and receive compensation for them, or be at liberty to remove them, he not doing any damage to the landlord's property? Yes.

You see no difficulty in carrying it out by a legal enactment? No.

Then, with regard to compensation with respect to other matters; you think that by legislative enactment it might be provided, that whatever may have been hitherto the custom in different districts, in all cases as an universal rule, compensation should be given to all tenants by legal enactment to a certain extent, for the application of bones, guano, rape-cake, and of drainage; do you mean to carry that to the extent of universal, because a legal enactment would be universal? It would be very difficult to do it.

Mr. Bouverie.] Have you ever known any claims under these circumstances to be made upon the landlord himself, and paid by him, and not paid by the incoming tenant? No, except he was going to occupy the farm himself. I have known landlords make allowances to tenants for buildings, and not charged the incoming tenant with them: the same with fencing.

Should you say generally amongst the landlords in your district there was any objection to inserting clauses in the agreement for giving this compensation? Very few landlords will refuse.

Sir J. Trollope.] Are any estates you are conversant with farmed by agreement? Many.

Are any of the estates so managed by the custom of the country; the tenants are left to act as they think fit for the good cultivation of the land? Yes.

Some of the estates you have the agency of? Yes.

You do not carry it out by lease or agreement? No; I intend to do it in all cases in which I am concerned.

You never allow tenants to manage the farms as they think best for their own interest? I should have such an agreement as would give them plenty of latitude.

Your tenants and you might not agree; they might have one idea of what was for their benefit, and you might have another? There are certain rules I should insist upon being followed, unless there was a written permission given to deviate from them.

You however leave it to the tenants to manage as they think fit? Yes; I should be sorry to tie them down to every crop, but merely as to general rules.

You never leave them without an agreement? No.

Mr. Colville.] Would it be just to the landlord to enact any law by which the tenant could claim compensation for unexhausted improvements or buildings made without the assent of the landlord? No; in that case it would be very hard upon the landlord; he might have his property saddled with expenditure of a great deal of the money that was doing him no good.

Then if that be the case it might be an advantage to make an agreement between the landlord and the tenant? Yes.

And legislative interference would be difficult? Yes, very difficult.

Chairman.] When you state you prefer these matters being arranged by private agreement, are you aware that in the opinion of lawyers, landlords whose estates are settled on their children, or in any other way, have no power to make those agreements binding, unless they are supported by the custom of the country? I was not aware of that.

If opinions have been given by two experienced barristers to this Committee to that effect, would that in any way modify your opinion as to the advisability of leaving those matters to private agreement? I should then try to meet it in some other way, to get the landlord's power.

When you say that you would require the landlord's consent for compensation for improvements that have been made, do you confine that answer to drainage and other permanent improvements, or do you go the length of requiring that the landlord's consent should be given to the farmer for every ton of bones and rape cake he purchased? No.

Your answer to the hon. member for Derbyshire is to be limited to improvements of a durable nature? Yes; it would be very desirable if all tenants gave in to their landlords once a year what their claims were.

Mr. Colville.] Then if that be the case, in the event of a tenant giving up his farm, in which that tenant, without the consent of the landlord, had applied a great quantity of bones and other artificial manure, the landlord not able to re-let that farm, would not the landlord be saddled with the remuneration of the outgoing tenant? Yes.

If that would be the result, would it be just that he should be so saddled? The tenant would never put an undue proportion on.

Chairman.] You have stated that it is the practice of half Nottinghamshire for the tenants to receive compensation for the bones they use; do they require the landlord's consent for the expenditure on those bones? No.

Do you know of cases where farms in that district have fallen out, and the landlord has been compelled to pay for an undue dose of bones? No.

Therefore within your extensive experience of the working of this system of compensation for bones, no such case of inconvenience to the landlord has arisen as was contemplated in the question of the hon. member for Derbyshire? There is no question that if you take bones for grass land the landlord might be subject to very serious inconvenience.

Your answer applies to the practice of laying on very heavy doses of bones on grass land, peculiar to Cheshire? Yes.

And in the nature of durable improvements? Yes.

You have answered that the owner of a fee-simple property unincumbered, is able obviously to make those agreements for himself? Yes.

In the properties with which you have been concerned, in the districts you are acquainted with, is there any large proportion of land held at the absolute disposal of the owners, with powers of sale, and without incumbrance? Not much.

Is not by far the greater proportion of the property in the districts you are acquainted with, either under marriage settlements, or held under church leases, under mortgage, or in some way or other less than the fee-simple estate? Most of it is.

By far the greater part? I should think so.

You have stated that it is difficult to find tenants on some of those cold clay farms in the eastern part of Nottinghamshire; does not that arise partly from the undrained and unimproved conditions of those farms? Yes.

Are you of opinion, if the tenants were to drain those lands, and eventually to give them up, that any claim they might have for the unexpired portion of their compensation for draining would be so great a bar as to counterbalance the improved condition of the farm, in finding a tenant for it? No; I should say that if the lands were drained there would be a much greater facility in finding tenants than there is at present.

With regard to buildings, are not buildings more extensive than at present exist, one of the principal requisites for carrying out an improved mode of farming? Yes.

Is it your opinion, practically looking to the various claims which landlords have on their ready money for expenditure and for providing for younger children, that they are, as a body generally throughout the country, able to meet all the demands that may be made upon them, out of their income, for the drainage of their land,

and also for putting up first-rate buildings on their farms? I think very few of them are able to give up two years' rent, which most estates would require; there are some few exceptions, of course.

Mr. HENLEY.] You have in answer to a question from the Chairman, said that you think landlords have no capital to drain the lands generally, or put up first-rate buildings? Not generally; of course there are cases of exception.

In your opinion are the tenants possessed generally of capital to put up first-rate buildings? From their own resources, certainly not.

How then is it to be done if neither tenant nor landlord have the means; or do you mean that that may account for it not being done? If it was known that a man would have security for it, men of capital I think would then embark in the land.

Do you then think that men of small capital would be put out of the land? Very much so.

Would that be a benefit to them? It would be a great benefit to the country, and eventually to them I should think.

What would become of them? They would find other employment; I cannot fancy a more unhappy person than a small farmer on a cold clay farm with half capital; he is worse off than a common day labourer.

Is he much worse off than the day labourer? Yes, much worse.

CHAIRMAN.] Is it your opinion, that whereas the tenant's capital is often deficient, and therefore insufficient for making those improvements; and whereas the landlord's income is also frequently in like manner deficient; there would be a much better chance of those improvements being made if there were two parties capable of making them, instead of one?—Yes, certainly.

With reference to parting with tenants, is it generally the habit of English landlords to part in a hurry with tenants, if they happen to be deficient in capital?—No.

On the estates which you have managed, has not great indulgence been shown to the tenant?—Always, I should say.

Therefore, if the landlord's income were set free in some degree by his being able to call upon the men of capital amongst his tenants to make the improvements on their farms, would not he be more likely than he is at present to apply his spare cash to the improvements of those farms in which the tenants were not able so to come forward?—If he was relieved from one class of tenants he would have more opportunity, if he wished it, to look to the other class.

Mr. COLVILE.] In the course of your experience, do you know of any case where, on the expiration of the tenancy, the landlord has made a demand for dilapidations?—Yes.

Will you state the nature of those dilapidations which they have demanded for?—One case in particular was fences and gates, and selling produce, or rather moving produce from the landlord's farm to his own; then we got some little recompense, but not nearly the amount of the damage.

Do you know of any case where the landlord has demanded recompense for dilapidations for allowing his land to become foul with weeds?—No, I do not think I do.

Would it be desirable, in the event of legislating on this subject, that the landlord should have the power of obtaining compensation from the tenant for that?—If the tenant is allowed compensation for all his improvements, the landlord ought certainly to be allowed for dilapidations on his land and buildings.

Whether that loss is by cross-cropping, foulness from weeds, or becoming below par from want of manure or due quantity of stock?—Yes; if the land is in that state, the landlord would have to let it at less rent.

Could you estimate the dilapidations from the loss of manure by an inefficient quantity of cattle, and the land being foul with weeds?—Yes.

Mr. HAYTER.] Would not it be necessary to consider the state of cultivation when the farmer entered upon it?—Yes, of course; that would depend upon his agreement.

Mr. COLVILE.] The fairest way would be, when the tenant entered upon the farm to ascertain the condition of the farm at that time, and at the time of giving it up also to ascertain what the state of the farm was?—Yes; the land ought to go on improving.

According to what increased quantity of corn it ought to bear?—Yes.

Sir J. TROLLOPE.] Taking the case of manure, where a party farmed land of his own, and rented land of two or three other landlords, supposing the Legislature ordained that he should be compensated for his manure, would not it be difficult to ascertain on which of the lands that manure had been used?—Yes, in some cases.

Mr. COLVILE.] Do you not think it would be desirable, to prevent fraud, that the tenant should give notice to his landlord, year by year, of all such actual improvements?—It would afford the landlord an opportunity of inquiring into that point, and ascertaining whether the manure had been spread upon the land while the matter was fresh in the minds of the labourers who had been engaged in the work.

Sir J. TROLLOPE.] Would not that compel the landlord to be a book-keeper against his tenant, and to keep a yearly account of such expenditure, whether in buildings or manure, or other matters of improvement?—The landlord would require the tenant to return to him at the Michaelmas or Lady-day rent day, a printed form, with the number of bushels of bones or other things used.

Earl of ARUNDEL AND SURREY.] That would allow the landlord an opportunity of refusing his assent to what was proposed to be done, or to what might have been done?—If he thought more was stated than was used, he would make inquiry.

Mr. COLVILE.] You would require him to give a receipt?—Yes.

And that receipt should be the basis of the compensation at the end of the tenancy?—Yes.

CHAIRMAN.] You do not find the landlords complain of a plethora of manure being used on their lands?—No.

Evidence of Mr. ROBERT BLYTH HARVEY.

CHAIRMAN.] You are a land agent and valuer of farming covenants at Pulham, in the county of Norfolk?—I am.

You are a tenant on the estate of Sir Robert Adair, at Flixton Hall, in the county of Suffolk?—I am.

And you are a member of one of the oldest farmers' clubs in the country?—The Harleston Farmers' Club.

That has been engaged now for ten years in considering the modes of improving farming generally?—Yes, it has.

How long have you been a farmer?—Twenty-two years.

What was the extent of your first occupation—About sixty-five acres.

What is the extent of your present occupation?—One hundred and thirty-five acres.

Had you any security for improvements on your first occupation?—Not any.

Have you any on your present occupation?—I have,

What improvements have you made upon it?—I have straightened the fences; clayed all the land, at the rate of fifty loads an acre; tile-drained the whole of it; filled up ponds, and made every improvement upon it I considered to be required.

Have you also purchased considerable quantities of artificial food and manure?—Yes.

What is the nature of the compensation you are entitled to for those acts of improvement?—I have a copy of the tenant right in my pocket *(producing the same)*.

Would you state to the Committee what the conditions are?—This is the tenant-right on the estate under which I farm. There is a separate agreement. "First, the allowance can only be claimed when the separation takes place at the instance of the landlord. Secondly, that the tenant shall furnish a list annually at Michaelmas to the steward or agent, of the improvements he has made since the preceding Michaelmas, specifying their nature and extent; and leave a duplicate thereof with his signature and date. Thirdly, no allowance will be granted when the agreement becomes forfeited by non-performance of the covenants. In those cases where leases are granted no allowances will be made for unexhausted improvements, such improved culture being the object of granting the lease, except as excepted in the clause No. 14 (of the agreement). Scale of allowances for all underdraining done within the preceding four years: 1st year, where no crop has been taken the full cost price will be allowed, but if a corn crop has been taken three-fourths of the cost price only will be allowed; 2nd year, two-thirds of the cost price only will be allowed; 3rd year, one-half of the cost price only will be allowed; 4th year, one-fourth of the cost price only will be allowed. All clay, marl, mould, chalk, or sand, gypsum, lime, rape-dust, bone, bone-dust, or other purchased manure, used for improving the arable, pasture, or meadow land, will be allowed for in the same proportion and on the same scale as the underdraining above-mentioned is allowed for, except in such cases where the clay, marl, mould, chalk, or sand is found on the farm, in which case the labour only will be allowed for according to the foregoing scale."

Mr. Bouverie.] Are those conditions which are referred to in your agreement, those upon which farms on that estate are generally let?—Yes.

Chairman.] But are the Committee to understand that those are the conditions which are generally enforced upon the property?—Generally on that estate.

Have you much increased the produce of your farm during your occupancy?—Since I have made the improvements I have alluded to, taking the last year of the preceding occupier and the first year of my own occupation as an average of the past produce, then since I have made those improvements I have increased the corn produce 25 per cent.

Is it your opinion that, notwithstanding the claim which you have against your successor for those improvements, the market value of your farm is increased in consequence of those improvements?—I have no doubt of it.

Could you state to the Committee to what extent you think it is increased?—I should think 5*l.* an acre.

Five pounds capital value per acre?—Yes.

Those improvements have answered to you?—I consider they have.

As a tenant they have answered to you?—Yes.

Your last answer implies that you think they have answered to your landlord?—I am persuaded they have.

Are they beneficial to the labourers?—Unquestionably, by the vast amount of employment they have created.

What was the amount of labour employed by you in producing those improvements: can you give the Committee any result of that kind?—I cannot say.

Have you any doubt that you have employed many more labourers in consequence?—Not any doubt.

Does your answer apply generally to the estates on this property where this tenant-right exists?—I believe that the Flixton estate, previously to the establishment of tenant-right, had remained very much in the same position as regards improved cultivation, and since that has been established it has generally improved; and I have the sanction of the steward of that estate for stating this.

Should you have ventured to make those improvements without this agreement?—No; and as a proof of that, I farmed sixteen years without any tenant-right and without making any improvements.

Is it the fact that the tenants generally have largely increased their expenditure on their farms since they had this agreement?—I believe the tenants generally, since the establishment of tenant-right, are improving their occupations.

Mr. Bouverie.] Since when have those conditions been made; when were they originally introduced on this land?—I believe mine was one of the first granted on that estate.

Sir J. Trollope.] Have you a lease?—No.

Had you a lease on your first occupation?—No.

Are not leases customary in Norfolk?—They are.

Upon the whole of the county?—Yes; but not always granted in the part of Norfolk in which I reside, which is close to Suffolk.

Chairman.] Are those conditions which you have handed in to the Committee precisely those you would recommend to be adopted?—No, certainly not.

Where then would you wish an alteration in them?—There are conditions attached to them independently of the scale of allowances I read to the Committee, and one of those conditions is that the allowance can only be claimed when the separation takes place at the instance of the landlord; that I decidedly object to.

What is your objection to that?—I think that a tenant who leaves from his own desire to better himself is equally entitled to the property he leaves behind him in the land.

Would that restriction prevent a tenant from fairly bettering himself by taking a larger farm?—I think it would; he would be unwilling to leave behind him that property which this clause would prevent him from receiving.

If that limitation were generally introduced, would it have a tendency to prevent farmers embarking capital in a farm, because they would be thenceforth tied down to that fram?—I think it would be injurious.

Are you of opinion as agent and valuer that a general adoption of similar stipulations for compensation would greatly improve the farming in the neighbourhood?—Yes, I am. I must be allowed, as to these conditions, to say that I think the allowance wants altering; four years would not be sufficiently extensive in cases of tile draining.

Have you seen many instances in your experience in which from a want of security farms are badly cultivated by the tenants?—A great many.

In those instances did this defect in farming arise from the want of capital, or from want of spirit on the part of the tenants?—Many cases of bad farming undoubtedly arise on the part of the tenant wanting capital; but a great majority, I think, arise from a want of security.

Then are you led to infer that in many of those cases the want of improvement has arisen from a want of security?—I have seen many cases in which the same parties who have held farms without security, and culti-

vated badly, have, on taking other occupations with security, invested considerable capital immediately, and have farmed with spirit and success.

You know professionally that that is a motive which prevents many tenants from embarking capital in their land?—I have heard that commonly observed.

Do you know any cases where certain improvements have been made by tenants without having security, and where those improvements have become the property of the next tenant, without sufficient remuneration being given to the party leaving them?—I do.

Without giving any indication of the names of parties, could you state any circumstances relating to those farms?—It would be difficult to do that without stating names, and that I should be unwilling to do.

Could you not intimate generally to the Committee the nature of the loss to the tenant?—I think where draining and claying have been executed just previously to the tenant leaving the farm, he having no tenant-right, has lost the value of that property; so that when he left the farm, the succeeding tenant would receive the benefit without paying for it.

You say that in several instances those operations and improvements have been made immediately before quitting the farm, so that the outgoing tenant has not been repaid for them?—Yes.

And he has consequently lost a portion of the capital so employed by him?—He has.

Has any other ill consequence arisen to the improving tenant from the want of security?—I have known cases in which the tenant has submitted at the termination to a disproportionately increased rent rather than leave the farm, subject to the loss of his improvements upon it.

You state that you have not many leases in your part of the country?—There are several agreements for leases of eight years, with covenants to make a lease if required during the time.

Has the operation of those leases been sufficient to encourage the improvement of the land?—They have encouraged it for the first four years, but the farm has been deteriorated for the last four years.

Mr. Borroughes.] You apply that to the lease as well as to the agreement?—Yes.

Chairman.] You are understood to say that, though those are called agreements for leases, they have the effect of binding the landlord and tenant, for eight years principally?—They are a saving of the expense of the lease, the term being so short.

And generally you say the tenant improves the land for the first half of the term, and whips it for the last half?—Yes.

Therefore at the end of the term is the farm in a much better condition than at the beginning of the term?—Generally I should say not.

Is it your opinion that the general system of compensation, with yearly agreements, would work better in improving the condition of the land than those terms?—Decidedly better than those short terms of eight years, which I have alluded to; but I should still prefer having a lease with a tenant-right at the end of it, provided the lease were for a longer term. The lease would give what no tenant-right can give, security of possession; and if I make the improvements, I make them with the hope, not that I shall simply receive that which I have actually expended, but the profit upon it too.

Is it your opinion that it would be for the interest of the landlord giving long leases to have a tenant-right at the end, to ensure that the farm shall not be whipped at the close of it?—Yes; the tenant-right would be very valuable to the lease, as well as to the yearly tenure.

Is it your opinion, in the case of leases, that the tenant-right is particularly necessiary for the protection of the landlord?—Yes, I think it is.

More than even that of the tenant?—More than even that of the tenant.

In the case of a long lease?—In the case of a long lease; and for the benefit of the labourers also; because, unfortunately, the labourers are not employed for the last three or four years of the lease, to the extent that they ought to be.

You are understood to say that those compensations are not general in the neighbourhood where you reside?—They are quite the exception.

What is the custom of the country between outgoing and incoming tenants in Norfolk, about you?—I reside in a district that has two customs exceedingly opposite to each other, but they are both equally general; one which is for the tillages, and the other which is for the crop; I am alluding to the root crop; the latter is called the Norfolk covenant, and the former the Suffolk covenant.

When you speak of tillages you mean acts of husbandry?—Yes.

You say, that according to one custom the acts of husbandry are paid for, and according to the other the crops are taken?—Yes, I am alluding to the root crops.

Under what course is the land?—It is nearly all four-course.

What is the custom where the acts of husbandry are paid for?—The farms are taken possession of at Michaelmas, on the 11th of October, and the outgoing tenant is allowed for the rent and parish charges upon that portion of the land which is fallowed, for all the tillage, for all the manure, and for the seed sowing, and hoeing.

What is the custom where the crops are valued?—On what are termed the Norfolk covenants, the crop itself is valued at Michaelmas.

Which crop?—I am speaking entirely of the root crop.

Are the seeds valued?—Yes, they are in both cases.

The white crops are in the barn?—Yes, the white crops are in the barn, the property of the away-going tenant, thrashed by the incoming tenant, and delivered by him.

The new crop is not put into the land?—No.

Is Michaelmas the usual time of entering?—Yes, the 11th of October.

In your opinion is there much land with which you are acquainted, which could be improved if the tenant should receive such tenant-right as you now possess?—A very large proportion of it.

Would you mention to the Committee particularly what districts you think capable of such improvements?—I am alluding to the district in which I reside, over which my knowledge chiefly extends.

You think the effect would be a greatly increased employment of labourers?—I do.

Is there much drainage required in your neighbourhood?—Nearly all the land requires drainage.

And as farming matters have now been discussed for a good many years, both landlord and tenant are pretty well aware of the advantages of drainage?—I am sure they are in our district, as drainage has been practised with us for 50 or 60, or 70, or 80 years.

How do you account for neither landlord or tenant, both being tolerably well aware of the advantage of drainage, having carried it into practice?—It has been carried into practice in my district.

You said a great deal required drainage?—A very great deal of land requires improvement; I think the drainage has been imperfectly executed, from a want of tenant-right to indemnify tenants; very few tiles are

used for draining, where I think tiles would be exceeding beneficial.

Mr. Colville.] Is there any turf draining?—Wood, straw, and bush draining.

Chairman.] Have you any other remarks to make to the committee?—Not any.

Mr. Colville.] Can you tell the Committee, in the event of giving up your farm what you would value your tenant-right at?—I do not know its present value.

You never made the calculation?—Not since I have been summoned to this Committee.

You are not solely a farmer?—I am a valuer of farming covenants, and I am also engaged in mercantile pursuits.

At Harleston?—Yes.

Chairman.] And you are also a land agent?—I am agent for the sale and purchase of estates.

Sir J. Trollope. Do you act as agent for estates?—No.

Do you ever value for incoming and outgoing tenants?—Yes.

And have had this question fully before you?—No; it is quite the exception, and not the rule; I know no other estates in our neighbourhood, except that I speak of, that has the tenant-right.

Whether with leases or without leases?—Yes.

Mr. Bouverie.] Who drew up those conditions?—The steward, I believe.

Was that done in consultation with the farmers?—No, I believe not; those conditions have now been in existence for six years; they would bear considerable improvement now that we know more on the subject than we did then.

Have your brother tenants made equal improvements in their tenancy?—Improvements, but not all to the same extent. I have the sanction of the steward of the estate for saying, the estate is generally in the course of improvement since the establishment of tenant-right.

Mr. Henley.] You have given your opinion, that the tenant-right ought to exist whether a tenant gives up a farm by his own will or by the will of the landlord, whether by notice from himself or by notice from his landlord?—That is my decided opinion.

Is that without reference to the amount of expenditure the tenant may have made upon it?—Yes.

For instance, supposing that twice the amount of clay were put upon the land than would be beneficial to it, and a notice were immediately given by the landlord to the tenant, do you think it would be just to make the landlord pay for that? In all those cases the valuer would give no more than the proper amount.

Then it should be restrained according to the judgment of the valuer whether the thing done were beneficial or not? I think so. I think that the law should create the property, but special agreements would in all cases be required.

Your former answer would be qualified in that way, that the valuer would have to decide upon the benefit of the thing done, as well as the value of it? Yes, I think that in no case ought the landlord or the incoming tenant to be called upon to pay for property which is not; there should be the improvement before either party is called upon to pay for it.

You would qualify your general answer in this respect? I am not aware that it qualifies the answer.

In your former answer you did not express anything as to the propriety of looking into the benefit to be derived to the estate? As a valuer of property myself, I always do take that into consideration; and I should in valuing tenant-right, consider the interest of the landlord and the interest of the incoming tenant, as well as the interest of the outgoing tenant.

Would it be proper that the condition of the farm as to dilapidations of the farm and of the buildings should be taken into account? The buildings are with us the property entirely of the landlord, and repaired by him; and therefore, if the buildings are out of repair, it is the fault of the landlord. With regard to the other part of the question, I think decidedly the state of the farm when the tenant leaves it should be taken into consideration, and an allowance made to the landlord if the farm has been deteriorated.

Sir J. Trollope.] Are not the buildings kept in repair by the tenants? The landlord, in almost every case, finds the rough materials; the tenant in some cases finds half the labour, and in some cases he finds the whole.

That is in putting up a new building; but in regard to buildings that have been put up before he comes on the farm, would not he be called upon to put them in repair? Only in respect to the labour; in my own case it is only half. The landlord finds the rough materials.

Mr. Henley.] In that case, where the obligation is upon the tenant to do the labour or a portion of it, in your opinion would it be right, if the buildings were deteriorated for the want of that labour being done, it should be taken into account at the termination of the holding? The tenant binds himself by his agreement to pay half the labour or the whole, as the case may be, and it is the interest and the duty of the landlord or agent to see the buildings are well kept in repair.

In a case where there is no agreement beyond the ordinary binding of the law that the man is to uphold the buildings, how is it then? I never met with a case; the custom of the country, without an agreement, would lead us to imagine that the landlord kept up the buildings.

That would be the custom in your part of the country? Yes.

Is it your opinion, that in the event of the tenant doing the drainage under such an agreement as you have specified, the landlord should have any notice of it, to inspect the manner in which it is done? Yes.

You think that ought to be a condition? Yes.

Sir J. Trollope.] Have you had occasion to estimate the value of any drainage done, in the course of estimating tenant-right? We have no tenant-right except on my own estate. I have met with cases where there have been leases in which I have had to value drainage.

Have you ascertained the mode in which that has been executed? I have taken the best evidence I could get.

Such as you could get on the spot? Yes.

As to the depth it might be, and the probable durability? Yes, and as to the expense of it, and the way in which it has been executed.

Is it possible that the legislature could lay down a rule by law by which that could be estimated? I think not. I think what is required is to create the property, to make a tenant-right; that the tenant should have that property, and I would leave it to the valuer to say what the property is.

You would then by that mode legalize the custom of every district of England, whatever that custom might be? No.

Would not that act of the legislature, by creating that property, legalize the custom of every district, whatever that custom might appear to be? I do not think it would interfere with the custom.

Would not it make it recoverable at law? Yes.

You would, in fact, legalize every custom in England, whether upon good or bad principles of agriculture? I would legalize the improvements the tenant leaves behind him, leaving it to the public man appointed to say what the amount is.

Leaving him to ascertain whether it were beneficial or not? Yes.

Do you think it would be possible so to legislate? Yes; no legislation would do away with the special agreements, that would still be required.

Mr. HENLEY.] What can the legislature do that the tenant cannot now do with the fee-simple landlord by agreement? I am not aware of anything in that case, not in a fee-simple.

Can you state to the Committee any advantage that will be ensured to the tenant or to the landlord, by having that done by law which they can now do by agreement between themselves? Nothing beyond the certainty of its being done, instead of its being left to the option of each landlord, in the case of the fee-simple landlord.

It would be a great advantage to enable landlords with limited interests to deal with these matters in a just way to themselves and to their tenants, and so to serve both? I think the law would be very applicable in cases of entailed estates, and othe property similarly situated.

Would it be right by law to compel persons to let their lands upon conditions to have certain things done, and the value of them ascertained afterwards? I think it would be just that in every case the outgoing tenant should be entitled to that property which in the opinion of the public man he fairly leaves behind him.

Without any previous consent given on the part of the landowner? I have stated already, that I think the landlord should have notice of the improvements about to be done.

Sir J. TROLLOPE.] Should he have the power of forbidding them? No.

Mr. HENLEY.] Ought it to be done without the landlord's consent? I think the landlord should not have the power of refusing such improvements as in the opinion of the tenant would clearly be an advantage to the estate, taking all care to guard the landlord that he pays only for improvements; I cannot see that as the incoming tenant or the landlord would only pay for real property, in what way he can be injured by the tenant making improvements if he pleases.

You think then the thing to be ascertained is the improvement done to the land, not the amount of capital expended by the tenant? Yes.

That would be your principle? I have always acted upon that principle, that I gave to the outgoing tenant compensation only for such property as the incoming tenant or the landlord could realize.

Without reference to the amount expended? Yes.

Mr. BURROUGHES.] Would it not be very difficult to get an opinion as to the real value of the improvements made by the tenant?—No; we find no difficulty in the valuations which we constantly make; valuers residing in the same neighbourhood would be constantly meeting each other, and if a property were valued to-day for the outgoing tenant, the same valuer very likely might be employed by the same party to-morrow as an incoming tenant. In the one case he would be eagaged in buying property, and in the other case in selling it, and forming his value of the property in both cases on the same basis.

You speak of your immediate neighbourhood?—Yes, and generally I think valuers find little or no difficulty whatever; we have been so accustomed to those matters, that we find no difficulty in them. I allude to the covenant valuations.

In reference to drainage, is not there a difficulty in prevailing upon tenants to take the best system? That has arisen from the tenants not having security to execute the best system.

Mr. HENLEY.] You would not carry it any further than you have stated, that the amount is to be ascertained solely with regard to the improvement, and not with regard to the cost?—No; that is my decided opinion, that care should be taken that money is not paid for property that is not to be found.

In your opinion does the expenditure of the tenant upon the land much depend upon the probable future price of the produce?—Not so much as many people imagine, inasmuch as I have found that a low price has frequently acted rather as a stimulus than otherwise. I have not found in former years that the high prices have led to much greater improvements than the low prices have.

Then the greater stimulus has increased the quantity of the produce, without reference to the price that that produce may obtain?—Every man, in making improvements, calculates upon what return he shall get; but the lower the price, the better it is necessary to farm. To meet those low prices, the greater produce we must endeavour to obtain.

Therefore the improvements, in your opinion, would be equally beneficial though the price of corn might fall very much?—Certainly not.

Then is it your opinion that in some cases the expenditure of capital is speculative upon land? In all cases it is, to some extent, speculative upon the part of the tenant.

If it is in all cases speculative, do you think that if the tenant finds the speculation a bad one, it is just that he should turn round and leave the landlord to pay the expense? Yes, upon the principle I have stated, if the property be there. If drainage be executed, that drainage should be paid for, provided it is left in good repair.

The speculation being a bad one, the question is, do you think it just. The question is not put as a question of drainage, but with reference to expenditure generally; if the speculation is a bad one, do you think it just that the tenant should be allowed to go off, and leave the landlord to pay the expense of that bad speculation? I cannot conceive of a case in which it would be known that it was a bad speculation at the time of the landlord taking the improvements; the landlord would be in place of the tenant, and time might be required to see whether it would succeed or not; it would be left as a matter for future profit, but if it was known to be an unprofitable investment, the landlord should not pay for it.

You were understood to say that the expenditure of capital upon land is always a speculation; is that so, in your opinion?—In every case an investment that is not certain must be to some extent a speculation; but when I drain my farm I am confident that I shall receive the benefit if I stay in it, or if not, that the party who does occupy the land will receive the benefit of it.

Drainage is a thing of long experience, and perhaps less speculative than any other mode of improving land; but taking various manures that have been introduced of late years, have not great differences of opinion existed as to the value of the results produced; is not it so?—Yes, it is.

Do you think in all those cases it is quite just that the landlord should be called upon to pay, notice being given by the tenant and he doing it at his own will, and making an expenditure of capital that might or

might not be productive?—In the cases of many artificial manures, the length of the term over which the tenant-right should extend might be advantageously altered; in the list which I have read to the Committee, I think I am allowed too liberally for the artificial manure, and I think for the permanent improvements I am not allowed sufficiently liberally.

That bears upon the question just put to you?—Yes, it does, with regard to the lighter artificial manure.

The artificial manure being among that head of expenditures which are more speculative, you are of opinion that it ought to be a shorter term?—Yes; I think in my own case if I were to leave my farm to-morrow, that the incoming tenant who paid me for the artificial manure I had expended money upon two, or three, or four years back, according to that scale would be injured.

You think that it ought to be shortened?—Yes.

Are you aware that in many counties custom has settled the period of years on which artificial manure should be paid?—I believe it has in Lincolnshire; I do not know the extent of it.

In so difficult a matter as fixing the value to be given to each manure, is not it a safe rule to leave custom to determine the period that the value should be fixed for?—I think I should prefer the opinion of those men called in to value. But in my case they would have no option, inasmuch as the amount is fixed which they would have to give me.

That is by agreement?—Yes; but as to the scale of allowance generally it would be better to leave it to the public men called in to determine what the value was.

You think their judgment is sufficiently sound that both parties might safely rely upon it?—Yes.

You are understood to say that every advantage that could be secured by law could be secured by parties under agreement, each having a sufficient amount of interest in the land?—Yes, on a fee-simple estate. If I have my tenant-right, I should not care whether I had it from special agreement or by an act of the legislature.

But in your opinion all parties ought to be compelled to grant that?—Yes, because without it we shall not see it adopted.

Do you think that parties ought to be compelled to let their land at a certain rent?—No.

You do not carry it further than the condition of holding?—Only as far as to secure to the tenant who leaves, that property which he leaves behind him.

And that not with reference to its cost, but with reference to its value to the incoming tenant?—Decidedly.

You think that ought to be paid by the landlord, even supposing the farm to be unoccupied?—Of course, if the landlord takes it into his own occupation he would pay it.

Supposing a case where the landlord does not occupy, and no tenant can be found, in that case ought the landlord to pay?—The outgoing tenant is not to suffer because the landlord is unable to find a tenant.

Even supposing the tenant-right should have become so extreme that no man could occupy the land on that account, would that alter your opinion?—No; on the contrary, the more extreme the tenant-right, I think the more certainty there is of letting the farm. The tenant would rather pay for the improvement than do it himself; he would rather step into a farm ready prepared for him, and pay the tenant-right, than step into a farm out of condition, and bring it into condition himself.

That is with reference to your neighbourhood?—Yes; and I believe it is the general opinion.

The tenant expenditure not being in your neighbourhood a very heavy one at present; that is, the incoming tenant not being heavily charged for improvements?—No; but we should in every case prefer taking a farm in good condition, and paying the outgoing tenant for the improvements, rather than make them ourselves, as we find a material advantage in doing that, because there must be more or less of loss for the one, two, or three first years.

That would require adequate capital on the part of the incoming tenant, would not it? Yes.

A man short of capital could not come in? He must hire a smaller occupation, and farm accordingly.

And if that smaller occupation be not offered to him, he must go without any? That does not make any difference in the capital. If he does not pay the outgoing tenant, he must have the money in his pocket to make improvements himself.

In point of fact, he must have it, if he takes the farm, with the heavy incoming of it? Yes, he must then, as now, regulate the size of his farm by the extent of his capital.

Mr. COLVILLE.] You say you are engaged in mercantile pursuits? Yes.

What sort of mercantile pursuits are they? I am a miller and seed merchant.

You say an act of parliament ought to be passed to compel the landlord to let his land on certain terms; can you see any reason why an act of parliament should not pass to determine the prices of the whole of the articles you deal in? Yes, certainly, I merely say that the law shall create to the outgoing tenant such property as he leaves behind him; which law the trader possesses to a great extent now. If I erect any buildings as a tradesman, I have the opportunity of taking them away, but I have not that opportunity on the farm. I want to have the same opportunity of taking away my buildings as a farmer, that I have as a trader.

Sir J. TROLLOPE.] Is there not the power of recovery on the part of the landowners, for any deteriorations of their land? Yes, undoubtedly.

And you would give adequate compensation to the landlord for deterioration of land, to be recovered by the same process as that by which the tenant would recover his outlay upon the land? Yes.

And you would make it equally binding upon the tenant to compensate the landlord for any deterioration of his land, as you would make it incumbent upon the landlord to compensate the tenant for the improvements? Yes, quite so.

Do you see any difficulty in recovering that compensation in the case of an improvident tenant deteriorating the land, and ruining himself?—No; inasmuch as with respect to the last year's rent, the last half year is generally due previous to the time of the tenant leaving the farm; and then there are the common acts of husbandry which he leaves, and which would furnish sufficient to pay for the deterioration.

In the case of a tenant going out at Michaelmas, it is at Old Michaelmas day? Yes, on the 11th of October.

Would the rent be due on the 11th of October? In most cases the last half year's rent is due in the previous August.

Have you known of any such cases? I know of very few exceptions in agreements.

Do you know of any such cases in tenancy at will? Yes.

Where the rent is actually due three months before the tenant gives up the occupation? The last

half year's rent is due previous to the termination of the tenancy.

And in case of a tenant failing in business, would not there be a difficulty in recovering the money? No.

Not if the tenant is absolutely bankrupt? No, there would not be any difficulty in that case. The landlord has the first claim upon the property upon the farm.

Would you give a preference to the claims of the landlord over those of other creditors? I am alluding to the fact of the landlord having the preference; if he had not the preference, my answer would not apply.

He has for rent, but is there any preference, he coming in as an ordinary creditor for dilapidation? The custom of the country for which the outgoing tenant would be paid is due to the landlord, not to any other party.

Does this give him the preference for those claims over any other creditor? Yes; it is his property.

In case of insolvency or assignment of property would he have a superior claim? He has the property whether the claim be just or not.

You are not a legal man? No; I will explain my idea; it is this: a tenant leaving his farm is entitled by his agreement to a certain amount of valuation for his acts of husbandry, for his seed layers, for his hay, and a variety of other things, amounting always to a considerable sum upon every farm; this amount will be reduced in cases to which allusion has been made, by the deteriorated husbandry of the farm; and the landlord instead of having to pay the full sum would pay the less sum, independently of any creditor, on the tenant's insolvency.

Mr. BOUVERIE.] You set off the dilapidations against the custom? Yes; I allow for dilapidation, and the amount due to the landlord is reduced by that amount; the fact is, the landlord has less to pay; it is a case that occurs repeatedly now, though not to a large amount.

Mr. BURROUGHES.] In a case of lease, and the insolvency beginning prior to that agreement, and the last year's rent being paid on the 1st of August, then the objections you have been questioned upon would not apply? No; the landlord would be in the same position if the insolvency occurred in the centre of the time as if at the close of it; if the insolvent held a 20 years' lease, and the insolvency took place at the end of 10 years, there would be the same left at the end of the term whatever it was.

But if the lease or the agreement for a lease merely specifies that the last year's rent should be payable on the 1st of August, it is the last year's rent only that is ensured; consequently the rents of the previous years are due at the 11th of October, and the crops may be threshed out before then, and the covenants may be very small and may not cover the dilapidations; how would it be in that case? In such an extreme case it might be that the landlord would not have sufficient to cover him.

Mr. BOUVERIE.] Do you always as a matter of practice value dilapidations, when you value farms for incoming tenants? Yes; they are generally trifling in amount with us, but we are supposed not to do our duty unless we look to see that the incoming tenant is justified.

Is that upon all the covenants there may be? I am alluding to the common custom of our country; it is a very usual thing to see at the bottom of the award, "creditor by dilapidations."

Mr. BURROUGHES.] But not to any great extent, or you would rather cut down your argument in favour of tenant-right? Not at all, inasmuch as the farm is generally taken in bad condition and left in the same condition; therefore little dilapidation is due, for that reason.

As to the Norfolk and Suffolk covenants, which do you consider the best system of farming covenants, the Norfolk or Suffolk covenants? That is a very difficult question to answer; I scarcely know which to say; each has its advantages and its disadvantages.

Then would it not be extremely difficult for the legislature to lay down any perfect system? I have stated that no legislation would do away with the special agreement; I want the legislature to create the property, to secure the outgoing tenant his property, if he has any, in unexhausted improvements.

CHAIRMAN,] Are you aware that an attempt has ever been made to interfere by legislative enactment with the custom of the country as to acts of husbandry? No.

Mr. COLVILLE.] Will you state to the Committee, what are the dilapidations you have valued? In all cases they are governed by the agreement under which the tenant is farming; he is bound to do certain things, and if he has not done them, those are dilapidations to whatever the extent may be.

Sir J. TROLLOPE.] How do you value cross cropping; crops taken out of proper rotation? There is sometimes a penalty fixed in the agreement for that; if not, we should in making the valuation give to the landlord what we should think a fair sum, taking always into consideration the state in which the tenant took the farm.

Could you ascertain that, you not having been the valuer when he took it? Ours are generally short terms, and we should take the best evidence we could get upon the point.

Mr. T. EGERTON.] You stated that your valuation to the incoming tenant upon entering a farm, would not be according to the cost of whatever may have been laid out in the improvements, but the actual valuation of the improvements when taken at the beginning of the tenancy? Are you alluding to the common custom of the country?

You were asked what your principle was of valuing for the incoming tenant, and you said that the valuer would have to ascertain what is to be paid not in respect to what was laid out, but according to the relative improvement of the property from the time he took it to when he quitted it; you were understood to give that answer? Yes, those are my ideas decidedly.

That the actual cost of improvements are not to be taken into account, but only the actual improvement of the land, totally irrelative of anything that may have been expended in improvements? I think that would be a fairer system than any other case, that the party taking the property might be sure that he had the value for which he paid.

How would that value be calculated with respect to that improved land; in respect of the ruling prices of the day, or the produce of each individual acre? I can scarcely give an answer to the question.

You were understood to say you would value the property according to its value at the present day, as compared with it some few years before, whatever the time was that the tenancy began; the question is, how do you propose to value that, either at the beginning or at the determination of the tenancy, with respect to the produce or with respect to the price? I did not intend to say there was a balance on the valuation, a balance, that is, between the commencement of the occupation and the end of it; but a valuation of the

improvements the tenant had made according to his tenant-right.

You were understood to say that the whole tenor of your answer was, that the cost of the improvements was not to be taken into account, but that the actually improved value of the property between the time he took it and the time he quitted it, was to be taken into account by the valuers of the tenant-right accordingly. Now will you explain to the Committee how that is to be done, unless you have some means of making a valuation either by the improved produce per acre, or according to the prices of the day? I do not think it could be done without the valuer taking the first cost into consideration; but I think the valuer ought strictly to see that the incoming tenant or landlord gets value received for his money.

How is it possible to ascertain that, unless you can ascertain first what your valuation is based upon? You must take the cost as some guide to the existing value.

CHAIRMAN.] When you say that you want to see the landlord secured the value which he pays for, do you mean that where any money has been decidedly injuriously laid out by the tenant, that then you would not take into consideration the actual cost to him, but what the real value was? Yes, that is just what I applied my answer to. I would give the landlord every possible means of protection from paying to the outgoing tenant for property he did not realise; that must be based, in the case of drainage or claying, upon the first cost, and the number of years it had been done.

Mr. T. EGERTON.] Upon what principle do you say that there must be one of the two, either the actual cost, or the improved value of the land? I think it should rest upon both.

CHAIRMAN.] Are you to be understood to say that if the tenant had drained at an extravagant rate beyond the habit of the neighbourhood, at an expense of £10 an acre, where £5 or £6 an acre would have produced the same effect, you would take the basis of your calculation at what you conceive would have been the proper expenditure? That is the whole scope of my argument, to guard the incoming tenant or landlord that they only pay for that which they receive property for.

If a tenant had put on 160 cart-loads of marl to an acre, when according to the practice of the neighbourhood 80 to 100 loads would have been sufficient in your judgment, and would have produced the same and perhaps a better effect, you would only have allowed him what would have been the proper cost? Yes; or it would be possible for a tenant differing from his landlord to sacrifice his time and expense and trouble to injure his landlord, which I would guard the latter against.

Sir J. TROLLOPE.] With respect to the question which has been just put to you, as to the use of an excessive quantity of clay being used, would not that be positively injurious?—Yes, in some cases where used in excess it would.

In that case, would you allow the tenant the full compensation which he ought to have had if he had done it properly?—No.

The case is put of 160 loads per acre; is it not the case that from 50 to 80 are sufficient, if properly applied?—Yes.

If a person putting on the clay puts on double the amount he ought to do, is not he injuring the freehold of the soil by that excess?—Yes, and I would guard against it.

Would you allow the compensation in that case for the proper amount, or make him pay for the deterioration?—He generally gives notice to the landlord of the improvements; and if against the will of the landlord he still makes those improvements, I should not allow him the money for it if I thought he deteriorated the property.

Mr. T. EGERTON.] You would allow him, then, to be the judge?—No, the valuer would be the judge.

Sir J. TROLLOPE.] You would take away the power of the veto from the landlord; that is, if a tenant thought a thing profitable for himself, you would not allow the landlord to prevent him doing it?—I would not.

Then the landlord in fact would be made to become responsible for a thing that he did not approve of?—Yes; subject as I have stated to this, that if the valuer thought it deteriorated the property, he should not pay for it.

You then would make a party liable for costs which he did not approve of?—Yes, provided he had the benefit of it.

You would make him pay for it, whether he approves of it or not?—Yes; if the tenant leaves the property behind him, I would make the landlord responsible, if it be an improvement.

Even though the tenant did it against the landlord's consent?—Yes, if he has done it, and leaves the property behind him.

Then you would compel parties to buy what they did not want?—Why should the tenant be required to leave the property behind him? I would compel the landlord to pay for improvements that the tenant left behind, knowing that in every case the money is paid by the incoming tenant.

Without any limitation of the amount and value of the improvement?—Yes, provided it be an improvement; the valuer taking care it is an improvement; in fact the landlord pays only for the property he receives.

Mr. T. EGERTON.] May not such cases as these arise, that in filling up pits and taking down fences, you may charge the land to the actual extent of the fee-simple?—Yes, perhaps that might be if the pit were filled up at a considerable expense; but the valuer would not allow that amount; there are many cases of that kind in which the amount that the improvement costs would not be allowed; bnt the extent only to which the farm was benefited would be allowed.

Why would not it be allowed; you were understood to say that the valuers were to take into consideration what has been done by the tenant, the cost and the actual value. Take the very case that has just been mentioned, that of a pit being filled up and the land reclaimed, at the cost of the fee-simple; why should not a valuer allow that?—I think they should allow only the value of the improvement, whatever it was; in the filling-in of the pit the field must be considered to b benefited by the improvement.

Do you consider that filling up old pits and taking down useless hedges are an improvement? It depends upon where the pit was situated; if it were in the middle of the field it would be a great improvement; you would cultivate that field cheaper in future, in consequence.

Earl of ARUNDEL AND SURREY.] Who would be most benefited by those improvements?—I think it would not cost the landlord anything; as the incoming tenant would pay the money. If a tenant-right was granted the landlords would be sure to be benefited, as their estates would be improved by the capital of the tenantry. I believe that the tenantry would also be benefited, but not so certainly as the landlords, the labourers and the consumers would.

Mr. BOUVERIE.] If the value of the improvement only paid the interest of the capital invested in it, how

would the landlord be benefited by the change of tenancy?—In that case there would be no benefit, as the farm would not be worth more.

CHAIRMAN.] You have been asked with regard to the injudicious employment of manures; is it your opinion that, inasmuch as the tenant must pay the bills in the first instance, and run the risk out of his own pocket, he would only employ such manures as would answer?—Yes; self interest would dictate the rule.

The rule of the use of manures would be the profitable use of them, and the very slight exception would be some mistake made in the employment of them?—Yes; I think the profitable use for the future is more certain than the past, as our experience is becoming daily greater.

You think that the tenants running the risk of the employment of the manures in the first instance, would be pretty good judges whether the manures they used would be likely to answer or not, especially if used upon a large scale?—Yes; upon my own farm, for instance, upon the introduction of nitrate of potass or soda the advantage was not always commensurate with the expense; it was not always used with advantage at first. I did not understand the subject then so well as I do now.

Sir J. TROLLOPE.] Are you always sure to get those artificial manures pure? No.

Have you not often got them adulterated? I give a good market price for them, and I do not find that to be the case.

Many of those manures are doubtful until tried, if you do not know their nature and properties? Yes.

In all those cases would you make the landlord or the incoming tenant responsible? I should guard the landlord from paying for what he did not receive.

How would you ascertain the value of guano; would you make the incoming tenant pay for it after the application?—Yes; but not to the extent that is now allowed.

Have you ever had occasion to value the application of it professionally? No.

Then you have not ascertained the basis you would make your valuation upon? No; I think the tenant-right in those artificial manures should not be extended so far as I have seen, but the cases of permanent improvement should be extended longer.

In valuing artificial manures have you any basis for your valuation? Unfortunately, not having a tenant-right in the neighbourhood, cases of that nature do not arise for want of that tenant-right.

Mr. MOODY.] Supposing a farm to have been deteriorated by the excessive application of clay, how would you value it to the landlord? I have already answered that; that a tenant wishing to clay any part of his farm would give notice to the landlord of the claying being done, in consequence of the special agreement that the landlord should pay for it; but if the tenant did it against the wish of the landlord I would not pay the tenant for it, unless there was a decided advantage from it.

Then is the tenant to get remunerated for that, if there is not only no benefit to the land by it, but an actual deterioration of the land in consequence of it? If we took the one case into consideration, so we should take the other case into consideration.

Then putting the case of a tenant being insolvent, and of land deteriorated, how is the landlord to be repaid? I cannot conceive any case in which there would not be sufficient property left to pay the landlord.

If a man has been insolvent for some time, and is holding on upon a lease, his property may have been subjected to seizures repeatedly and nothing may be left, and he may have neglected all acts of husbandry; then how would the landlord be protected? I believe there is always sufficient valuation to pay such damages; I never met with a case where it was not so.

CHAIRMAN.] There is a great deal of claying in different parts of Norfolk and Suffolk, is there not? Claying is very general in my district, marling prevailing in the more western parts.

Has any instance come within your knowledge where the tenant has injured his land by putting too much clay on? No, but a great many where they have not put enough on.

Is it likely that a tenant would be so eager as to put too much clay on the land? I think such a case would never occur, and claying is so old a practice that most tenants know the quantity required.

In a case of a tenant being insolvent for some years, would not he be particularly unlikely to expend his money and apply the strength of his horses to spoiling his land by putting so much clay upon it? Quite the reverse, no doubt.

Have you known any instance of insolvent farmers having been so injudicious as to spoil their land by over-claying it? There never was such a case within my experience.

Sir J. TROLLOPE.] Is there any regulation as to digging that clay, or are you at liberty to dig it where you like? Yes, we dig it where we please.

Are you under contract to fill the pits up? No.

You usually dig a pit and leave it open? Yes, we generally leave them for the cattle to drink at.

Evidence of Mr. JAMES GRINDLING COOPER, of Blythburgh Lodge, Suffolk.

CHAIRMAN.] What is your profession?—I am a farmer, and occasionally I am employed to value property.

What extent of land do you farm?—Something over 2,200 acres.

In what county do you farm?—In the eastern part of the county of Suffolk.

Near what part?—Near Southwold.

Sir J. TROLLOPE.] Do you farm all under one landlord?—Yes.

CHAIRMAN.] Are you on the light land or on the low land of that neighbourhood?—The light land.

Is your arable land light?—It is a mixed soil, sandy and light land, that I occupy.

Have you any tenant-right for improvements in your neighbourhood?—We have no tenant-right beyond that recognized by the custom of the country, and by the leases generally granted in the neighbourhood.

Is that custom for acts of husbandry, or for acts of improvement?—Merely for acts of husbandry, hays, manures made from the produce of the farms, seeds, and things of that description.

What is the custom between the outgoing and the incoming tenants?—The custom in Suffolk is to pay for the rent and parish expenses on the fallows, together with all the tillages put in, as ploughing and harrowing, and for other things as stated in the last answer.

When you say the fallows, do you speak of naked fallows, or fallows with roots?—On our light lands we grow all the fallows with root crops, on the heavy land we grow only a portion; still the same system is pursued as to paying rent; and tillage for long fallows as well.

When is your entry?—At Old Michaelmas, the 11th of October.

Are you of opinion that the tenants are injured by a want of security for the outlay of their capital?—I think if the tenants had security for the outlay of capital, they

would cultivate their lands in a much better manner than they do now towards the latter part of a lease.

What is the longest time the leases are for?—Eight years, more generally.

Is the practice there such as has been explained by the last witness; to improve the land in the first half of the lease, and to let it go down in the last half?—I know of several cases where farms have been farmed well during the beginning of the lease, and the cultivation allowed to deteriorate towards the expiration.

Can you state any case in point?—I know of a case at this time, where the party will quit it at Michaelmas next: eight years ago that farm was in a very high state of cultivation; it is a heavy-land farm, and has nearly 200 acres under the plough; and in consequence of the tenant having for the last four or five years been aware that he would be obliged to leave at the expiration of his term, it is not in near so good condition as it was: it all requires under-draining and other improvements to be made.

If that farmer had had a tenant-right, he would have kept up the condition of the farm?—No doubt of it.

What is the difference of value to the landlord per acre, as it now is, and as it would have been if the tenant had had a tenant-right?—I have always considered under-drainage a very material improvement to heavy land; and from the manner in which it is done in our neighbourhood, it will continue effective for eight years; and at a cost of something like two guineas an acre.

You think it is worth 5s. an acre less to the landlord than it would have been otherwise?—I do not think that the tenant would hire it at less rent in consequence of the expenditure not having been incurred; I think the outgoing tenant would be a loser to the extent of half of the outlay, and the incoming tenant would suffer the same amount, in consequence of the underdraining being quite worn out.

Then the landlord would have to make a heavy outlay for the under-drainage?—The landlord or the incoming tenant would.

And that you think the incoming tenant and landlord would divide between them?—No; I understood your first question to be, what rent the landlord would be obliged to take less.

And you are understood to say that the whole farm now required to be drained?—The whole of the arable land does.

Upon whom would the expense fall?—I have no means of knowing; I have never seen the agreement between the new tenant and the landlord.

Are you of opinion that a tenant-right would be of advantage to the landlords in general?—I do think so, inasmuch as at the expiration of their tenants' terms the estate would be in a much better state of cultivation, and would command a greater price in the market to let or sell. I know of a case in point that has occurred in the last eight or twelve months, where a party purchased a farm and held it in hand a few years, and has gone to market with it in an improved state, and has made an increased price in consequence.

Can you state the proportion per cent. of the increase?—I will state the actual case, it was this: the purchase was £6,000, and it sold for £8,500.

Do you think that the farmers of your neighbourhood would so far avail themselves of the privilege given to them by tenant-right, as to increase considerably the employment of their labourers?—I have no doubt; for the want of being paid at the expiration of their terms for unexhausted improvements, there are a great number of labourers discharged two or three years before the tenant quits his occupation, to lessen the expenses; had he a claim for underdraining and other improvements, he would continue to employ his full number of men up to the expiration of his term.

You are to be understood to state to the Committee, not as matter of opinion but as matter of fact, that you know the tenants towards the end of their leases diminish the number of their labourers?—I know that to be the fact generally.

Are you of opinion that it would be better to leave those things to private agreement between landlord and tenant?—I think if it is left to private agreement between landlord and tenant, we shall remain in the same state that we are now in.

Mr. Bouverie.] Have you known any agreement embodying such stipulations in your district at all?—Very few.

Are the tenants in the habit of asking for them?—The tenants as a body very much desire them.

Is there any unwillingness on the part of the landlords generally to enter into such stipulations, if asked?—Unfortunately many of the great landed proprietors cannot be considered men of business; they do not understand the practical bearings of the case, they are therefore exceedingly tenacious of coming into any system different from that they have followed many years.

Chairman.] Your opinion is that the large landowners know nothing about farming?—I cannot say nothing; but unfortunately they do not make themselves practically acquainted with farming matters.

They do not understand this kind of arrangement between landlord and tenant?—Generally speaking, certainly not.

Mr. Bouverie.] You think that if they had intelligent regard to their own interests, they would be willing to enter into those agreements?—It would be better if there were a fair arrangement of tenant-right, taking special care to protect the interests of the landlords as well as the claims of the tenants.

Which state of things do you think would most tend to keep the farms in a constant state of improvement; your present system of leases for eight years without tenant-right, or yearly holdings with tenant-right?—I should prefer a lease with tenant-right attached, which would induce the tenant to keep the farm in a proper state of cultivation up to the expiration of his term; ensuring the tenant payment for such things as he is now entitled to receive for, and for such other improvements as he might make.

Admitting a lease with tenant-right at the end of it to be most perfect, which is best, a lease without tenant-right, or a yearly agreement with tenant-right; which is best for the landlord?—We hardly know anything of yearly agreements; with us it is either a lease or an agreement for a lease.

Which is equivalent to a lease?—Yes, it is equivalent to a lease, because the parties contract to execute a lease when called upon.

Have you any doubt that your existing terms are insufficient to secure to the landlord his receiving back his farm in a proper condition?—I am quite sure of that; the landlord does not, under the present system, receive his farm in such a good state as he would do if the tenant were secured his unexhausted improvements.

Sir J. Trollope.] What is the system at the expiration of eight years; does the same tenant take on, or is the farm open to competition?—Unfortunately under the present system the landed proprietor is not solicitous about his tenant; he does not pay that attention to a man of capital, a good farmer, being an old tenant, that I consider he is fairly entitled to; and if the farm is in a high state of cultivation, from the number of applicants and the power of the landed proprietor, I am sorry to say in many cases a tenant who has been occupying

his farm for some time is obliged to leave, if he objects to the terms proposed.

Has not he usually the preference?—I should state that there are many cases where a preference is given; I think on large estates it is so generally, provided he will give a full rent.

The system of changing at the end of eight years is very contrary to the good farming of a district, is not it?—It is very injurious to good farming.

Those short leases are not a good thing for a tenant, are they?—Neither for landlords, tenants, nor labourers.

Earl of ARUNDEL AND SURREY.] How long have those been the customs of the country?—From time immemorial; I have seen by old leases the same covenants have been handed down from time to time.

Sir J. TROLLOPE.] Is that invariably the term, eight years?—No.

Are there no leases of 19 and 21 years?—I have not known of 21 years; I have known 12; the general system is eight years, and longer leases are the exception.

Mr. COLVILLE.] Do you not think that instead of yearly tenancies, it is extremely desirable that the tenant should have his farm secured to him at least for eight years; for this reason, that on entering on the land he generally finds there is a great deal of labour wanted to be expended upon it, which in the event of his being obliged to leave before the expiration of eight years, without tenant right to secure him, he would not be remunerated for, and that therefore he requires to have the occupancy of his farm for a certain period to allow him to exhaust the labour he has employed upon it? In short, do you not think that in all cases that are now cases of yearly tenancy, it is desirable that the tenant should have the farm secured to him for a short period, in order that he may be reimbursed the money that he has expended in cleaning it?—If he has it only secured for a short period, and the farm is in a bad state when he takes it, he could not fully reimburse himself; if the period was for eight years, and he laid out his money in the four first years, he would not follow the system up the remaining four years.

Sir J. TROLLOPE.] Would not that be an injurious course to himself, if he hoped to take that farm on again at the expiration of his term?—Not having it secured to him, and coming in competition with the public at large, he would not be prudent to have it in such a good state at the expiration of the eight years as he would have it in during the first four years.

Mr. COLVILLE.] Are your farms let by tender?—No; except they happen to be the estates of corporations, trustees of charities, or that kind of property.

CHAIRMAN.] Is there much land in Suffolk that in your opinion might be considerably improved, under a system of tenant-right, by marling or draining?—As a whole, Suffolk must be called a heavy land county; and the first and most important step towards good husbandry is to keep the land dry by a continual and thorough system of drainage, and I think an equitable principle of tenant-right would in most cases secure so desirable an object.

Sir J. TROLLOPE.] Are you in your first eight years' tenancy on your present farm?—I have lived there three eight years.

In the same occupation?—Yes.

Then you have a longer lease than eight years?—Yes.

And are now in the third period?—I would not have taken my farm for an eight years' term; I have already lived twenty-four years on it as tenant.

Then you have outlived more than one term?—Yes.

And have occupied again under the same landlord?—Yes.

Had you much competition for your farm; were other parties admitted to stand in and bid against you?—My first lease was out when things were much depressed, and for the greatest part of my farm I had not any competition at the time I made the second hiring; but for an off-hand farm that I hold under the same landlord I had two competitors.

And you took on again?—Yes.

Mr. BOUVERIE.] You have spoken of proprietors not rightly understanding their interest; do you think the agents who act for the proprietors very often have not a regard to the interests of the proprietors, and do not see what is most to the advantage of the estate?—I think the agents do understand the interest of their employers on many estates, but there are exceptions; and some consult the caprice of their employers, rather than the just principles of agricultural tenancy.

Mr. T. EGERTON.] Is your answer applicable to agents or stewards of the large properties you are mentioning; are they chiefly managed by agents with stewards under them, or are they managed in what way, speaking of the general custom of your country?—I think generally the land agents understand what they are about.

Are those large properties you alluded to chiefly managed by land agents under the proprietors?—I may say are almost invariably managed by land agents.

Do you think they have an equal objection with the proprietors themselves to any change in the customs as to letting farms?—I do not think they have the objection that the landed proprietors generally have.

What is the general system; if a farm is to be let, is it valued by the land agent or steward?—The general system is for the landlord or his agent to fix a rent.

How is that sum of money arrived at?—That is a matter of calculation between the landlord and his agent.

As to your own knowledge, what is the general custom; is the farm viewed and each field looked over to ascertain what the produce is, and what the rent ought to be?—Where there are agents that are men of business, they inspect the state of the farm as to cropping from time to time, and by so doing they are enabled to form an opinion as to what the farm ought to produce, and then it is a matter of consideration between them and the landed proprietors; the tenant is not consulted, but asked by the agent or landlord a price for the farm; and they make terms and other arrangements afterwards.

Earl of ARUNDEL and SURREY.] Generally there is considerable discontent you say at the present time amongst the tenant-farmers in that part of the country, for want of some system of tenant-right?—I said there was a general wish for a good system of tenant-right.

Mr. BOUVERIE.] Do you think enacting such a measure as that proposed would lead to a great spirit of improvement in that county?—I think it would.

In your neighbourhood, not far from you, is there not a considerable tract of light blowing sand, which might be very much improved by marling?—We have no marl in our neighbourhood; but great advantage would arise by carting marsh ooze, or other heavy soil on such land.

It is something more towards the south-west of Suffolk, towards Orford?—That is a neighbourhood I know very little of; I have understood the farmers in that district cart a good deal of loam and craig.

Speaking as a large occupier of land, have you any doubt that the recognition of tenant-right for improvements would lead to a considerable improvement of the land, and an increase of employment to agricultural labourers?—I think so; and it would ensure the continual employment of agricultural labourers up to the expiration of the leases.

March 23rd, 1848.

MEMBERS PRESENT.

The Earl of Arundel and Surrey.	Mr. Henley.
Mr. Burroughes.	Sir C. Lemon.
Mr. Colville.	Mr. Moody.
Mr. E. Denison.	Mr. Newdegate.
Mr. Drummond.	Mr. Pusey.
Mr. Tatton Egerton.	Mr. Stafford.
	Sir John Trollope.

PHILIP PUSEY, ESQ., IN THE CHAIR.

The evidence of Mr. SAMUEL JONAS.

CHAIRMAN.] Are you a practical farmer in Cambridgeshire, at Ickleton?—I am.

What is the extent of your occupation?—I have over 2,000 acres altogether.

Is that all under the plough?—About 2,000 acres is under the plough.

Although a practical farmer, you obtained the prize for the best report on the farming of Cambridge from the Royal Agricultural Society?—Yes.

Has that led you to make yourself more acquainted than otherwise you would have been with the agricultural condition of Cambridgeshire?—Unquestionably.

You have also been an active member of the Council of the Royal Agricultural Society from its foundation?—I have.

Has that led you to consider the best modes of improving farming, and made you acquainted with the farming of a considerable part of England?—Yes.

What is the nature of the soil of your farm?—My own occupation, a portion of it is heavy land, a portion of it is chalk land, and some sandy land upon chalk formation, and some black heath land; it is nearly all light land; there are about perhaps 130 or 140 acres of heavy land.

Is that entirely of a character requiring a good deal of assistance?—It is a very poor description of soil indeed; many years ago producing little or nothing.

What is the amount of stock which you now keep upon that farm?—My original occupation was a little over 1,700 acres. I have now lately, within the last few days, hired an adjoining farm making the quantity I mention; I confine myself, therefore, to the 1,700 acres.

What is the number of sheep you usually winter?—About 2,400.

What portion of those are breeding stock, and what proportion are fat?—About 400 breeding stock; I find it necessary to fat more, to improve the condition of the farm.

Do you fat about 2,000 sheep a year?—Yes.

Do you purchase artificial food for that purpose?—To a considerable extent I do.

Besides fattening sheep, do you fat any beasts?—Yes, I do.

How many?—About 100 per annum.

What was your expense per week last winter for artificial food?—Before I began to sell any of my sheep at the usual period of the year, it cost more than £100 a week for artificial food for stock.

Which you bought?—Yes, which I bought; oil-cake and corn for my sheep and bullocks.

Do you consider that the beasts which you so fat pay you in the increase of their meat?—Far from that; so much so that I once made an offer that I would give any one £1,000 a year to fat 500 bullocks on my farm.

You calculate, on the food you give to your beasts you lose about £2 a head in the proceeds of the sale of the animal, and are only brought home by the increased value of the manure that is made by those beasts?—Exactly so.

Is that the case also with the cake which you give to your sheep?—Not exactly so.

You consider that on the 2,000 sheep which you fat, the increased value of the animal when fat does not bring you home as to the cost of the artificial food you use?—There we may get some little return, but not on the cattle. In fatting sheep it is not that loss to tenant farmers, but in fatting beasts you are obliged to fat a certain quantity of beasts for the consumption of the straw to make it into manure.

You farm your land under a lease?—Yes, I do.

Have you any compensation for improvements in that lease?—None.

When the term of your lease is drawing to a close, if you have reason to suppose that you are not secure of its being renewed to you, should you continue the present very high course of farming which you pursue?—In the absence of any other protection I must protect myself by reducing the expenses and productive properties of the farm, unless I could renew the lease a few years from the time of the determination of it.

If you had no renewal of the lease, you would cease the purchase of the cake during the last three or four years, and in defence of your own property, you would allow your land to return to the unproductive state in which you found it?—There is no question about that.

Is it general in Cambridgeshire to give any compensation to the tenant for improvement of the land?—I know of none; the lands of Cambridgeshire are generally held on lease, and some portion is under yearly tenure.

Can you inform the Committee in general what has been the increase of produce of corn during your tenancy, comparing the produce of the land when you first took it, and its present produce?—You mean the increased produce arising from the improved cultivation I have adopted. I am not prepared to answer that question, because I did not think it might be put to me. I did not look over any documents to answer it.

You have no doubt it is a considerable increase?—If it was not so I should have been a considerable loser by the operation.

What was the stock kept upon your land by your predecessor?—It was one of the worst stocked farms in that neighbourhood; there were not more than 200 or 300 sheep upon it, and never exceeding 400 sheep upon the farm, seldom exceeding 300 and none of those fatted, and they seldom if ever fatted a beast upon the farm.

Upon that farm, what proportion of your present stock should you say you keep?—On that farm I should say about 1,200 sheep and 40 bullocks.

You keep about 1,200 sheep and 40 bullocks, where only 400 or 300 sheep were kept before?—Yes, and no bullocks ever fatted or kept.

Therefore in the event of your foreseeing the close of your tenancy, you would be obliged in self-defence to reduce the production of meat upon your farm nearly to its former state?—Exactly so.

You say that there is no general custom of compensating tenants for improvements on their farms; is there any practice of compensating them for improvements by drainage?—I do not think that there is any, unless there is some agreement made. I wrote yesterday morning, and sent my son over to a friend of mine,

one of the leading men, as a land agent and valuer in our neighbourhood, and he writes me word back, stating what the usual manner of valuing hollow drains would be. There is the usual allowance, but I do not consider the landlord is bound to pay it, except under agreement.

What is the allowance?—The allowance would be a reduction in the first crop of one-third of the cost price of the drainage; the second crop one-fourth of the remainder; the third crop another quarter, and the fourth crop another quarter, and a fifth crop no payment whatever.

What is the usual tenure of land in Cambridgeshire?—By lease or yearly tenure.

Do you find any difference in the cultivation of farms under a lease, and by yearly tenure?—Unquestionably; generally speaking the lands on a yearly tenure are very badly cultivated, unless the tenant has very great confidence in the landlord.

The land held upon lease is badly cultivated during a great portion of the time in consequence of the insecurity felt by the tenant?—Exactly so.

At the close of the term, unless there is a prospect of renewal, you were understood to say it is badly cultivated?—Any tenant farmer who had been farming to the extent that I am farming, and have been for many years, who was carrying out the improved system of farming, would not carry it out the latter part of his lease unless he could secure a renewal of the lease before the expiration of the term, and he would let the land fall back to its original value to get his own compensation before he made a fresh bargain.

Are you of opinion, from your experience, that advantage would be derived from an accordance by the landlords to the tenants of a tenant-right for improvement or not?—Yes.

What will be the advantage in the cultivation of land?—I made a memorandum, which perhaps the Committee will excuse my reading. I take two supposed cases of two farms lying contiguous to each other, both of equal value, of the same extent, and in the same state of cultivation, each farm at the same period passing into the hands of new landlords; the one farm the owner will only let from year to year, and in no way offer to the tenant any security for his capital; the consequence would be, the tenant would adopt an exhausting system of farming, using no artificial manure, keeping few, if any, fat cattle, and employing but few labourers, and in the course of about eight or twelve years he would have so exhausted his farm, and yet without breach of covenants, he would give his landlord notice to quit, and the landlord would be compelled to let his land at a reduced rent, at some shillings per acre less; he would also be obliged to give some kind of security, by lease or otherwise, to induce an enterprising tenant to take it. The other farm having passed into the hands of a landlord who, seeing the necessity of giving security to his tenant for his capital employed in the permanent improvement of the land, gives him a lease, and engages that himself, or his incoming tenant, shall pay him for the unexhausted improvements at the end of his term; that landlord would have no difficulty in securing a good and enterprising tenant out of the number of applications he would have for his farm; he would find no necessity for reducing his rent, for the incoming tenant would not only pay the rent, but would also gladly pay the sum required for unexhausted improvements, and would be in a better position too, than a person who has hired such a farm at a reduced rent, and none but those who have hired farms in a completely exhausted state (as I regret to say has been my own case) know the vast amount of capital required, and the number of years it will take before he could get it into a proper state to give him any return for his capital employed.

You are to be understood to state, that as a practical farmer, you would rather pay the outgoing tenant for the benefit of the artificial manure that he had put into the soil, than find the soil in its natural state, and yourself undertake the whole expense of bringing it into a higher condition?—There is no question about it.

Is it your opinion, that when land is in its natural state, particularly light land, a considerable loss arises from the failing crops during the first two or three years, before you reap the advantage of the artificial means that have been employed upon it?—In one occupation which I undertook myself some years ago, that was in the worst state of cultivation possible to find a large tract of land; I was seven years before I got the balance on the right side of the account. The outlay of capital was to an enormous extent, and it was seven years before I got any return for the capital employed.

Is it your opinion, that if your predecessor on the farm had employed the same system as you yourself employed, high cultivation, and you had paid to him a fair amount for his tenant-right, you would have been not only free from loss, but have had a profit for the first year?—I do not know that that would have been the case, because the amount paid for unexhausted improvements might be such the first year, that you would have no balance of profit; I would much rather pay for all the unexhausted improvements of any occupation, than take it in a bad state of cultivation, unless the rent was to be very considerably reduced indeed.

Should you not consider that the sum paid for improving the farm, in the absence of tenant-right, would more than counterbalance the sum that the outgoing tenant would be entitled to from the incoming tenant, where there was a tenant-right?—Yes; it must be carried over a number of years where the tenant-right was paid, and you would charge yourself for so many years before you got a return upon it.

Is there much land undrained in the county of Cambridge?—There is a large portion of lands of Cambridgeshire which are badly drained, but I know of little or none but what has been drained, but then it has been done very badly.

Is there none on the western side of the county?—That is the district I allude to, which is badly farmed; the district there is very badly drained. I should think, that under the circumstances in which we have been lately placed by the unusual wet this winter, that that land will produce very little corn for the ensuing year.

Is it your opinion that the wheat has also suffered, so that the produce at harvest will be lowered decidedly?—On the land I have now lately hired, a portion of the heavy land is very badly drained. I have no hesitation in saying that there will be very little more than the seed sown on a large portion of that, which is badly drained.

As an active member of the Royal Agricultural Society, you have travelled over a great portion of England, is it your opinion that there is great room for improvements by drainage and otherwise in many parts of the country?—I do not recollect any meeting that I have attended of the Royal Agricultural Society, but that in driving to the place I have seen large tracts that might be considerably improved, and the produce nearly doubled by a better system of cultivation.

Is it your opinion that such weather as we have lately had must have greatly injured the wheat, and dimi-

nished the produce in a large portion of this country?—In going down to our meeting at Liverpool I saw a large tract of heavy land, which if not improved, would not produce corn at all under the wet season that we have had this year; that is, if it has not been improved since I saw it.

Are you of opinion that such improvements would tend not only to a greater security in the production of food, but a greater and increased employment of agricultural labourers?—I know of nothing that would benefit the country so much as giving security to the capital of the tenant, by which he was enabled to carry out permanent improvements that would be the means of giving constant employment to people; and not only so, but would also improve the morals of the people, and give to the country a better description of labourers than you would have if there was not that employment given to them.

As to the general feeling amongst farmers now, do they wish for greater security for their capital in your locality?—I myself know of few men possessing capital who would engage in the cultivation of land, unless they had some security, or they would naturally secure themselves in the way I have mentioned, by partially reducing the value of their land towards the termination of their lease. There are tracts of land that members of the Committee are aware of, where the landlord is debarred from granting a tenant any compensation under the lease; and therefore, to introduce a proper cultivation of the lands of England, it would be necessary to give them security, which is not now given.

Under the present circumstances is it particularly desirable that such security should be given?—I think more so than ever.

Why?—Because now that you have called upon the farmers of England to compete with the untaxed produce of other lands, there is a great reason why security should be given to the capital of the farmer; and as a proof of that, I hold in my hand a letter which I have had from a friend of mine, a land-agent, for a farm on the continent of Europe, and I will show to the Committee, by reading that letter, the low value of land on the continent of Europe, and that if we are called upon to compete with such low-priced land as that farm is, security is absolutely necessary to induce the tenant to carry on the permanent improvements of the land. This is a farm called the Puhnein, with an excellent brick-built house, comprising 14 best rooms, besides servants' apartments, kitchen, pantry, and cellar, &c. Also a brick building, with four vaulted cellars, rooms for labourers, stabling for 22 horses, 100 cows, 25 oxen, and 400 sheep-barns and other necessary buildings, and a malt-house, and as to the malt which is made there, I should beg to observe that it pays no duty; there is a brandy distillery, a water-mill, a forge, and a corn drying-room, together with 1,836 acres of land, part mixed soil and part heavy, 612 acres of which are now cultivated as arable land, producing wheat, barley, rye, oats, almost all kinds of grain in fact, beans, peas, and clover; 612 acres of mowing meadow ground; 612 acres of cattle and sheep pasturage; and I am sure the Members of this Committee will be astonished when I tell them the rent that is asked for it; the rent of all that farm and buildings is £266 per annum, with no tithe, and for the term of six years; and for any period after the expiration of the lease, there may be a renewal of such lease for any term at an increased rent, amounting altogether to £338. "Puhnein," the name of the farm, is situated about 10 miles from the coast, with a good road down to the harbour, from whence it is only six hours' sail to Riga, so that expense of transit will not be heavy, it being only 10 miles distance from the harbour, with a good road to it, and only six hours' sail for the small craft conveying it to Riga, the expense of carriage cannot be heavy. I should say, from all the information I can obtain, that all expenses included, the wheat grown on this farm can be conveyed to the port of London at from 7s. to 7s. 6d. per quarter, the average expense of delivering wheat of British growth into the same port would be about 2s. 6d. to 3s. per quarter; and the only tax paid by the tenant of this farm would be 10s. per head on all the male labourers or serfs attached to the farm.

Mr. Newdegate.] Where is that?—Near Riga, close to the port of shipment, and the freight from which is not considerable to England. The possession may be given on the 12th of June, 1848, and the Committee will be still more astonished when I tell them the terms upon which the Baron will give possession, with the lands perfectly cultivated and sown with the usual crops, together with 20 horses, 40 cows, and all the agricultural implements used by the Baron in the tillage of the farm, free of any charge to the incoming tenant for payment for those animals, seeding, tillages, and implements.

Chairman.] Are you to be understood to be of opinion, with the extensive knowledge you have of farming all over England, that, looking at the probability of a considerable fall in the price of agricultural produce, tenants will have great difficulty in holding their own, unless they have some security given them for the outlay of their money in the improvements of their land?—I think that if the tenant farmers do not receive remuneration for the employment of their skill and capital, either by remunerative prices or by increased produce meeting the diminished price, the farmers will not carry on permanent improvements.

And you think that if there should be any considerable fall in price, many farmers, who for want of security are not able to make such an outlay as you and other spirited farmers make, will be in considerable danger of not being able to carry on their farms at all?—There is no question about it; and I must state that I much question whether the increased produce will meet the diminished price, because you cannot have a largely increased produce without a very considerably increased expense, and if the prices are diminished considerably, even then I do not think we should get repaid.

You feel certain, at all events, that they will be in great difficulties without the additional security for the outlay?—I think if the prices should be diminished considerably by the operation of the measure that I have alluded to, no farmers would carry on permanent improvements unless you gave them other securities than they now possess, where they have not a lease.

Mr. Henley.] You have adverted to a paper from a land agent or some person of that description, with regard to a foreign farm offering a very advantageous bargain; do you know whether anybody has accepted it?—I had the offer the other day, and I have no hesitation in saying that if any of my sons were of age sufficient to take it, I should have no objection to put one of them there.

Have you made any further inquiries as to the locality of that farm?—I have referred to the map of Europe; I find the situation is near Riga, and when shipped at Riga the farmer there has the same advantage as he would have if he lived on the coast of Essex; the markets of England are open to him as well as to me; the only difference would be in the difference of the expense of transit.

Have you satisfied yourself upon that point?—I do not know that I can exactly state that to the Committee now, because I do not contemplate hiring it. I have 2,000 acres in my occupation now. I have got quite

enough without it, but if I had a son old enough to have gone abroad, I should have sent him.

Are you aware of the proportion of the annual value of the produce of the farm which is ordinarily taken in the shape of rent in that country by the landlords?—This is a fixed rent.

You are asked whether you know the ordinary proportion of the value of the produce of the land that is taken by the landowners in that neighbourhood?—You mean the price of the corn product.

The question means this: if the gross produce of the farm is £1,000, what portion of that does the landlord get in the country?—About one-fourth, according to this statement.

Do you suppose that the produce of 1,800 acres of land in that country would be only about £1,000?—It is not all arable.

Can you describe what proportion of the value of the gross produce of that land, be it in corn or meat, that you suppose the landlords in that country are wont to take from their tenants?—You are now speaking of the produce in its present state, not what I should make it produce if I occupied it.

The question refers to the produce of the farms there?—Does the question mean the produce of the farm in its present state of cultivation?

The question refers to farms generally?—I know nothing of them, except from this document.

You have no knowledge of that kind?—Not the least.

Have you considered that which is printed on that paper, without further inquiry, to be enough to warrant you, as a man of business, to embark your capital in such an undertaking?—Yes, after having had an interview with my friend, who has the letting of that property.

You would want further particulars?—I should not be so ignorant or so foolish as to engage without.

The cost of transit, for instance, of your produce to market would be a material element in the value of it?—That would depend upon circumstances; if I increased the produce it would be only so much per quarter. I think the freight from Riga is very little; I should be within bounds if I said 4s. a quarter.

But confine yourself to the narrower question of the expense of the transit of the produce to Riga?—This is near the port of Riga.

What do you mean by "near"?—You have the same information for the consideration of that as I have.

"Near" is a relative term; a land-agent might call 50 miles near?—Say it is 50 miles.

And if there was no road there, what would be the expense of hauling a quarter of wheat to Riga?—The same as 50 miles in England; both have the same advantage.

In England we have roads?—So they may have there.

Have you ascertained the fact?—I should not know how to remove it without a road.

In foreign countries (those who are conversant with them say) produce is drawn 50 miles over what we should call no road at all, that is, over open lands; what, in your estimation, supposing that to be so, that it would have to be hauled over those 50 miles, would be the cost of hauling a quarter of wheat that distance?—That I am sure I should not be able to answer; there can be no doubt that this Committee are well aware of what is going on on the continent of Europe, as to the improvements and mode of transit of goods; there are railroads forming in every direction, and they would greatly facilitate the communication.

Do you or do you not know the proportion of the produce generally taken by the landlords on that part of the continent of Europe?—No; but when I know I have an offer of 1,836 acres of land, part mixed soil and part heavy land, under 2s. 6d. an acre, I am satisfied that English capital and skill in such an undertaking would pay almost ten times the amount of interest as upon capital employed in England, as they have just the same advantage of the market.

Without reference to the distance you may have to haul your produce to Riga?—Not without that.

If you know nothing about it, how came you to the conclusion?—I know nothing but that that farm is offered; I do not know that it may not have a road passing through it.

Without inquiring, you would not embark in it?—I should be a fool if I did.

As far as that paper is concerned, then, we cannot draw any correct conclusion upon the comparative position of a Riga farm and an English one?—As to the rent of the land, you can.

Does not the difference of rent depend upon the situation?—The only difference is in the transit of the article from Riga.

You have to get it to Riga first? Yes; being near to Riga, I do not take it to be more than a very little distance from Riga; if it was 50 miles only from a large town like Riga, from which considerable exportations of corn are made to this country, I do not suppose for a moment but that there are good roads there.

Do you know how the corn exported from Riga to this country finds its way there? I should say within the distance of 50 miles there would be good roads.

And if there were not 50 miles of road, what then? There would be the increased expense of transit to Riga.

You have stated that you think a remunerating price or an increased produce necessary to induce farmers to go on in their present improved state of cultivation? To induce them to carry out a better one, in some cases, I should hope.

Speaking of your own improved state of cultivation, you think it necessary? Yes.

And you have also stated that you thought even with an un-remunerating price you could go on with an increased produce? I much question that myself.

Then a heavy outlay upon a farm, in the face of the existing difficulties that we are now under by an alteration of the law, is in some degree speculative? There is no question about that; and it becomes more speculative if you give no security to the tenant.

Whether the tenant is going to occupy the land himself, or to pass it into the hands of anyone else, the return of that capital is in some degree speculative? It must be so.

That being so, do you think it right that the party making the outlay should have the power to make it at the expense of another person, the expense of his successor? Yes, for this reason: I would myself, tomorrow, as I stated, rather pay for all the unexhausted improvements of a highly cultivated farm, than take one in an exhausted state of cultivation.

Those are extreme cases? They would be extreme cases.

Do you think that if the price of corn was to fall to an extremely low price, so as to make it clear that no increase of produce could cover the expense by the great outlay of capital, it would be just to call upon the successor by law to pay for that outlay? I think it would be right for the interest of the country generally; if not, you would see the labourers of this country not employed, and the country in a very dreadful state, in my opinion.

How long do you think it could go on if persons should be allowed, or to what extent should it be allowed that they should expend capital not remunerative, at the expense of other parties than themselves? It would not be at the expense of other parties, because

other parties would have value received under the circumstances in which the valuation of those improvements took place.

If your evidence has been understood, you have stated that no profit is obtained from the fattening of bullocks? No doubt about that; I have derived none.

You say a loss of two pounds a head is sustained by the creation of meat by that means? I am so confident of that that I would give any gentleman £400 or £500 a year to feed beasts upon my farm.

You look for your remuneration in the increased quantity of corn that you hope to obtain in the succeeding year or years? Exactly so.

That remuneration would of course depend upon the price of corn? No question of it.

If the price of corn fell below a certain amount there would be no remuneration? Certainly not.

Then do you consider that a man should be enabled to carry on a speculation of that kind, and then call upon the successor to pay the money, when it was clear that it was a dead loss when those improvements were made? All that will be taken into consideration.

Is the value then to be ascertained by the amount of capital expended, or by the amount of the value to the succeeding tenant? Do you mean for me to point out a plan on which I should propose the tenant-right.

The Committee wish to know your opinion; supposing yourself or any other person has laid out £1,000 in feeding bullocks, and from a fall in the price of corn, it is clear that the increased produce of the farm will not repay it, in your judgment would the valuer consider the £1,000 you have laid out on the value of the improvements to the incoming tenant? Speaking of my own case, I should protect myself before the expiration of my lease.

Taking the general view of the case, what is your opinion if you or any other person had laid out £1,000 in feeding bullocks in the last year of the tenancy, and that from a fall in the price of the corn, it was perfectly clear that the outlay could not be recovered; I want to know what is your opinion as to whether the valuer should assess the incoming tenant to the amount of the £1,000 which had been laid out, or that he should assess it upon the principle of gain to him? I should suppose they would assess it upon the principle of what portion of that was unexhausted up to the period of the incoming tenant coming in.

Even if the speculation was an unsuccessful one, and a clear loss to the occupier of the land? You could not prevent it; that sort of thing must arise; I am of opinion, and I cannot help stating it, that such cases may arise, I think, by throwing open the trade of England to foreign ports.

You are to be understood to say broadly that such cases may arise? Yes, I am fearful of it, but nevertheless I do not fall back in the cultivation myself. I look at it as my own speculation, and immediately such becomes the result, I can of course protect myself by some future engagement with my landlord; I must go on with it for a time. It is impossible for a British farmer to compete with the foreigner unless the land is cultivated to the highest pitch.

Do you know anything of the cultivation of Belgium? No.

You have stated that with respect to sheep, there is not so much loss as upon bullocks? No.

Have you any loss at all in feeding sheep in the manner you have described? No, I do not think I am a loser.

Do you think you gain? Yes, I should say so in some years; this year I shall, with the high price of mutton.

On the average of years, do you gain or lose in the amount of capital expended in that way? On an average of years I am a gainer by feeding sheep.

There would not be so heavy a claim for capital expended in that way, as for capital expended in feeding bullocks? No.

You have stated that there is a vast increase of meat by this mode of husbandry; you have stated that you fat 2,000 sheep? Yes.

What proportion of increase of meat do you consider it amounts to, being a sheep feeder; in what state do you buy your 2,000 sheep? In poor stock condition sometimes, and sometimes in a half-fed state.

Upon the 2,000 sheep what weight of meat do you suppose you create? Some I buy with nothing but the frame to build upon, and I procure some half fed; you might take them at one-third.

You increase them one-third? Yes, I should say so; it would be like an increase of 600 or 700 sheep by the fatting.

Is the agricultural state of Cambridgeshire generally good; is it in a high state of cultivation speaking generally? I should say there is a large portion; the major portion of the light land is as high cultivated as most land.

And the principal part you have stated is held upon lease? Yes, upon lease. A portion of the heavy land district is also well cultivated; a large portion of the heavy land district in the neighbourhood of Huntingdonshire abutting upon Hertfordshire and Bedfordshire is very badly cultivated.

Is there any difficulty in the tenant by lease securing such a tenant-right as he thinks just, according to the systems he farms on? I have never known a case of that kind.

Is there any difficulty in a tenant with a fee simple landlord being able to take a lease and the landlord to give a lease securing to the tenant such a tenant-right as they mutually agree to be just; are you aware of any difficulty existing to prevent that being done? I know that landlords will not sometimes give them.

Supposing they were willing to give them? Then there would be no difficulty, the lease would be secure; I contend that the lease is a good security to a certain extent, but in taking a lease without the security of the tenant-right, the tenant must protect himself before the expiration of the lease by removal, or by reducing the cultivation of the land to a certain extent.

Is there any reason in your opinion why a clause to that effect introducing such tenant-right as you might think just could not be introduced into the lease? The same difficulty would then exist as now.

Can you point out the difficulty?—I do not know of its existence myself, but where people have leases that security is required.

Do you know any reason, if a landlord agrees to a clause in the lease that the tenant shall be paid a certain proportion for the oil-cake he may have fed off, or a certain proportion of the drainage he may have done, why that clause may not be inserted; do you know any greater advantage that the tenant would derive from the legal protection you speak of, than he could derive from an arrangement to that effect with his landlord?—That answer would come better from the landowners, who would state the reasons why they do not give them now, which is the case. The owner of the land would be the party to give that answer. I am not in that fortunate situation; I am in the more unfortunate position of an occupier of land.

Do you know of any benefit that the tenant would derive from the one more than he would from the other, provided the landlord would give it?—I do not quite understand the question.

Supposing the landlord was enabled to give the tenant

a lease, securing to him, according to the county in which he lived, such tenant right as the parties considered just, would not that answer the tenant's purpose as well as a legislative enactment?—All I should require would be, if the landlord would give me a lease, and secure me for all my really unexhausted improvements at the end of that time, that is all I should require; I should prefer that to a yearly tenure under tenant-right.

Are you aware of the custom of other counties besides Cambridgeshire, as to the practice of tenant right?—No, I am not. I only speak of that I know.

The customs in different parts of England being very various, can you suggest to the committee how they can frame a law that should meet all the customs?—I should suppose the law would supersede the customs, and become the established law of the land; that is one reason why it should be a law.

You were asked this question: having one custom in Lincolnshire, having another custom in Cambridgeshire, and having no custom at all in another county, can you suggest to the committee how they could form a law to meet such conflicting circumstances?—All you want, then, would be to form a law by which the tenant was secured the employment of his capital by paying him for all unexhausted improvements, and that would supersede all customs.

Can you tell the committee how that law is to be framed?—That you may have from other witnesses; I myself do not feel competent to give that.

You cannot suggest anything to the committee?—Do you mean what plan I should advise; the mode of the plan?

You having turned your attention to it, the committee wish to know whether you can advise them upon it?—Not to that extent.

Could you suggest any plan that would meet the state of all England, and not Cambridgeshire alone; we cannot make a law for Cambridgeshire?—No, that is what I mean; that is why I think the legislature ought to make some law, instead of having no custom there and no custom here, a little protection here and less elsewhere, that is the reason why a law should be made to give us some general security.

You have stated that the landlord and tenant can do that if they please?—No question of it, but they do not do so.

You have stated that Cambridgeshire is in a high state of cultivation?—Part of it is.

Is that held under lease?—That is held under lease.

Which in number perhaps have been very great in Cambridgeshire?—Yes, I believe they are.

Under those circumstances the tenants have improved the land without any further protection than they have now?—So they have, and so I have; but if I were not living under such parties as I have the good luck to live under, and who always meet me in the most handsome manner in the renewal of the leases, I should be compelled to do an injury to the landlord and the labourer, by reducing my operations and expenses to prepare myself for that fresh engagement; therefore it would be best to have a general system by which that protection might be given.

Is there any difficulty in any tenant going to the landlord three or four years before the expiration of his lease and asking for a renewal?—No; where the landlords do not meet the tenants, as I have said, there is a depreciation of the annual production of the country, and consequently there is less production of food for the people.

If a tenant were to go to the landlord (admitting that his farm is cultivated in this spirited manner), and were to say, If you renew your lease I can continue the same cultivation, but if you do not renew it I shall be forced to lessen that cultivation; what inducement would the landlord have not to renew the lease?—He might not have any objection; I have done so on one farm of 1,000 acres; I have got it on a lease of 16 years; I thought I would protect myself with an agreement originally, as to renewal of the lease, and I have got it for 16 years, terminable on my part at the expiration of the first eight, and not so on the part of my landlord; that gives me the opportunity I require of a renewal.

Then you have a lease with the power of determining it yourself, without the power of your landlord determining it?—Yes, exactly so.

In your opinion are leases necessary as well as tenant right?—If I were a landowner I would rather give my tenants 16 years' leases, renewable at the expiration of 12 years, and also binding myself or the incoming tenant to pay for unexhausted improvements. I would rather do that as a landlord, or as a tenant, than have tenant right with yearly tenure, because by so doing you give to the tenant an interest in the property and an interest in the parish, and you give him an interest in improving the moral condition of the people; he has that interest in the people that a yearly tenant would not have; a man fixing himself in a parish would feel as I have felt it my duty and interest, to employ all the unemployed labourers in that parish; we have not any unemployed people there, and I have felt it my interest to improve the moral condition of the people, but that would not have been the case with a yearly tenure, it is therefore necessary to grant leases.

But you would have had to maintain them if you had not employed them?—Yes, but look at the state of men when they are employed. When you look at the state of Europe at the present moment you cannot have a more striking proof of the necessity of bringing about a well-educated, religious and moral, and well-employed peasantry; because upon that everything affecting the institutions of this country are based. When we look to Europe at the present moment, we see that we can have no better security than having a well-employed population, and by giving of 16 year leases we should get that.

You have stated that the tendency of leases now is to induce the tenant to run out the land in the last three or four years of the lease?—It is the natural consequence, unless a man be secured by a renewal of his lease.

Taking a farm out of condition, which has been taken at a very low rent in consequence, with the exception of its being improved; how would it bear upon the right of the tenant to be paid for the outlay at the termination, provided he has run the farm out?—I do not comprehend you.

Supposing a farm out of condition to be taken at a very low rent, upon the expectation that the tenant is to cultivate it on a good system of husbandry; according to your statement the tenant would be justified at the end of the term in running out that farm, and leaving it to the landlord in a condition no better than that in which he took it at first?—No; a man who takes a farm in a completely exhausted state of cultivation would not bring it down so low as that, but for his own security, in the absence of other security, he would reduce it to a certain extent.

Then you were misunderstood to say that you thought that would be rendered in the same state?—I was not speaking of lands in a completely exhausted state, but only in a certain state of exhaustion.

You have spoken of the drainage of a part of Cambridgeshire?—Yes.

Is that, generally speaking, ancient drainage?—An ancient system of drainage, not very ancient in its durability.

In point of fact, drainage was in practice there before the greatly increased drainage which has taken place of

late years?—No, I think not; I think Cambridgeshire has not been an ancient drained land.

Not that which joins Essex?—That joining Essex and Suffolk; I believe with regard to that, that the system of drainage has been better carried out; on the other side, the heavy land district, that is, on the other side of the county, it is evident that it has not been drained many years; all is there upon the high back system; that was the plan with our forefathers; they took the land from the water instead of the water from the land.

Your former answer as to the badly drained parts, where the drainage is badly done, did not apply to that part bordering upon Essex?—No.

You have stated, in your opinion, that the produce of the lands, if they were generally better cultivated, would be nearly double; do you adhere to that answer, or do you wish to qualify it?—Speaking of the present state of Cambridgeshire?

No; you stated that in answer to a question put by the Chairman?—I was speaking of a district of land I saw badly cultivated.

It was a general answer; do you think that the produce could be doubled?—Alluding to that badly cultivated land I had seen in my journey, I adhere to that opinion: it might be doubled.

Do you think that that is a very considerable extent of land, or to what extent do you apply your answer?—I could not answer that unless I were to take a more particular survey.

Your answer was very general upon that point; do you know anything about the produce per acre; you referred specifically to the part going towards Lancashire; do you know the produce per acre there?—No, I could not state that; I only judge as a man passing through the land, and seeing the appearance of the land, and the state of cultivation it is in; I should think it is very much below the average produce of the kingdom, but if improved I consider it might be doubled.

Mr. T. Egerton.] What do you consider the average of the kingdom per acre?—The averages have been differently taken; I think they are taken by Vancom at 18, and by Young, I think, at 20 or 22 bushels per acre.

What would you consider the produce of that land, according to your system of cultivation?—That would depend upon whether it was heavy or light land.

That land near Liverpool you spoke of as being in a bad state, what ought that land to carry; how many bushels an acre?—If it produces 12 bushels an acre, it might be made to produce 24 bushels easily.

Are you aware at the present moment what the average of that part is?—No, I cannot say; I was only passing through.

Mr. Henley.] It was a bird's-eye view from a railroad carriage?—I have generally adopted, for the purpose of viewing the country, the plan of riding outside of the carriage with the guard, or of posting; we have generally made a party and posted.

Do you think, in posting or riding, either inside or outside of a railroad carriage, you could form such a judgment as would enable you to come to a sound conclusion upon the fact that the produce might be doubled?—I think that my answer proves that I could not come to any correct conclusion; but I stated that it might come to that.

At the utmost then, what it would prove would be this, that a well-cultivated farm will produce a great deal more than a badly cultivated one?—Yes, no doubt about it.

What quantity of sheep do you keep in the summer, keeping 2,000 in the winter?—It would depend entirely upon circumstances, according to feed; when my fatting and grazing stock are reduced, I have, comparatively speaking, only a small portion, I may perhaps begin to buy my stock for fatting in a month's time. When I speak of the full amount, that is the height of winter, when the whole stock is on the turnip land; when I speak of the time when my flocks are reduced, they will not be more, perhaps, than 800 or 900 sheep.

Do you use artificial food through the summer?—Yes, all except the ewe flock; I never sell a lean animal off the farm.

You go on with the artificial food during the summer?—Yes, except the breeding stock.

Can you give the Committee any approximate opinion as to the price per pound for meat to enable you to go on wish that spirited mode of husbandry?—With the present price I should be perfectly satisfied.

Would 6d. enable you to do it?—No.

Could you do it under 6d.?—I must do it if I occupied the land. I could not produce anything if I did not pursue that improved system on the light land I occupy.

Mr. Newdegate.] In speaking of leases, you have said that in the concluding period of the lease, unless the tenant had a prospect of renewal, he must, to a great degree, exhaust the land?—He would.

If in the yearly agreement there were inserted clauses to give compensation for improvements, would the tenant then have as good a security for the capital he has expended as under a clause of a lease for the same purpose?—I would not myself, under any circumstances, occupy under any man in England by yearly tenure.

Will you state your reasons?—I would not, under any circumstances, put myself in a position to be liable to be removed from a place where I was settled down by holding under a yearly tenancy.

Are you aware that it is the habit to hold some of the best cultivated farms in England by the year?—I am not aware of it, but I have no doubt that a considerable tract of country is held by yearly tenure.

Are you aware that that is the general system in Lincolnshire?—Yearly tenure?

Yes?—And compensation?

I do not say that?—I believe that there is a general system of compensation or security given to the tenant of Lincolnshire. I do not know it of my own knowledge; I feel confident that the lands in Lincolnshire would not be cultivated in a high manner if the tenants held only by yearly tenure; there must be security given to the tenant.

That is not an answer to the question; do you know whether in those districts they hold under yearly tenure? I know nothing about Lincolnshire, except from general information.

Then the Committee are to gather from your answer that you think a lease essential to good husbandry?—Leases, in my opinion, and security as well to the tenant for unexhausted improvements, are necessary to have the land of this country carried out to the full extent of cultivation.

Then you desire not only the leases as they exist, but some compensation to be guaranteed by law?—It would be better if the unexhausted improvements were guaranteed at the expiration of the lease.

You are speaking of districts where there is no compensation under custom?—Yes.

A great part of your evidence has gone upon the presumption that Parliament should legislate for the general advantage of the community?—Unquestionably.

Separating from that part of your evidence the question which relates to justice to the tenants, do you conceive that many tenants suffer injustice under the present system?—Not knowing the circumstances, I could not state that. I know of none in my own neighbourhood.

Then in your own neighbourhood the character and the interest of the landlord have hitherto served as a

certain guarantee?—I know of no case of injustice arising in my own neighbourhood.

Then the object which you chiefly contemplate in advocating some law to give the tenants additional security for their capital is chiefly with a view to the national advantage?—The national advantage, and the advantage of the landlord too. The landlord would not be called upon for a reduction of the rent, unless under very pressing circumstances, so that prices became very much lower.

Would you have any such law generally to over-ride contracts between landlord and tenant?—It would be of no use having a law of that kind unless it did give to the tenant that security which he seeks for.

Notwithstanding any agreement that might exist between him and his landlord?—If the landlord had the power of saying in all cases "I will not give compensation," it would be of no use legislating upon it. If the landlord is to supersede the Act of Parliament passed for that purpose, this inquiry and the result of it would be useless.

Are you aware that the agreements between landlords and tenants are in many cases undefined, and in some cases not even written?—I do not know that; they must be written, surely.

Are you aware that a great deal of land is held in this country without any written agreement?—Not that I know of.

Would not it be an advantage to render the agreements for holding land more specific than they are, including specific clauses for compensation to the tenants for improvements, and compensation to the landlord for dilapidations?—I would not award a security to the tenant unless he was obliged to give the landlord some security; I would make the tenant liable for dilapidations, the same as I would make the landlord responsible to the tenant for improvements.

Might not those objects both be secured by written agreement between landlord and tenant?—That it might be done, there is no question; but as to whether it will be done, I think the general feeling of the country is, that it is not likely to be done without legislative enactment.

Why then do tenants take farms?—Tenants must employ their capital; they are brought up to farming, and they do go on; but they do not go on in the manner they should go on where they have merely a yearly tenure; they do farm—that is, they occupy—but they do not cultivate.

Is it your opinion that the agriculture of this country has improved of late years?—No question about it.

Notwithstanding the disadvantages you say have existed?—Thanks to the operation of our agricultural societies, it has improved.

And notwithstanding the disadvantage which at present you think is connected with the tenure of land?—In all parts where those improvements are carried on to the full extent, it is where the security is given.

By custom?—By leases or by custom.

And you think that leases would not be sufficient without custom?—I think it would prevent the necessity of the tenant exhausting the soil before the renewal of his lease.

In any law that should operate between landlord and tenant, do you not think it would be necessary to give the landlord more immediate means of recovering losses by dilapidations or bad cultivation than at present?—I think the landlord should have the power necessary; I would say, give the landlord all the power for that that is necessary. We desire that every tenant creating dilapidations should be made to pay for them, and I would give the best means of accomplishing that.

Then the Committee are to understand from your evidence, that you desire to have those means to facilitate the security of capital expended in the improvements by the tenant, and are willing that the same means shall apply to the recovery of the compensation for the dilapidations by the landlord, when such dilapidations shall have accrued under tenantry?—Yes, unquestionably.

The Earl of Arundel and Surrey.] You have stated that the English farmer could not compete with the foreign farmer, on account of the lower rent of land and the lower value of the produce, and you have given but one instance to prove that, which you read from a paper: that was an advertisement, was not it?—It was from a friend of mine who has the letting of this property.

It is an advertisement?—No, it is not an advertisement; it is a paper sent to me.

Have you any reason to believe that that farm is a fair average of the farms of that neighbourhood?—It is impossible for me to answer that. I have stated I had the offer of that farm.

That might be a farm shut in by hills, or under water a great part of the year, and affected by many other things that might make it ineligible?—Nevertheless, the Committee will be aware that the average price of wheat sent from Dantzic was for some time 21s. a quarter.

But you produce a general instance in support of a particular assertion?—I produce it to show the difficulties the farmers have to contend against.

Then will you inform the Committee whether that one instance you produce is a fair average of the whole?—No; I can only say I suppose it might be so.

Mr. T. Egerton.] With respect to various improvements, such as drainage, pulling down hedges, or dressing land, would you propose that those should be done with or without the consent of the landlord?—I should not allow pulling down hedges without the consent of the landlord.

How as to the drainage?—I would not take a farm if I were not allowed to drain it without asking the landlord. Towards the expiration of the tenancy I think it necessary; you ought not to go on the last three or four years without the landlord having some power over the money he or the in-coming tenant would have to pay.

Should then the landlord or in-coming tenant be liable for any expense for drainage done without the consent of the landlord?—Yes; but if done within a certain time of his quitting, then the landlord ought to have some control over the manner in which the money is expended; the agreement would carry that.

Without an agreement in a case of yearly tenancy, how would it be then?—I do not know that there would be any objection to it; I myself have no objection to let the landlord have the direction of it, but I do not see that the tenant should be deprived of his right.

You were understood by the Committee to say in the course of your observations that a great part of the land you had lately entered upon had been badly drained?—I am only occupying a certain extent of that land; one-twentieth only of what I occupy is heavy land.

Some of the land you have entered upon is badly drained?—Yes, the first farm; the farm I took in Cambridgeshire is very little drained.

Would it be fair upon you as in-coming tenant to be made liable for the expenses of drainage badly done?—I should be glad to pay for the unexhausted improvement.

If it had been badly done; because you were understood to say it had been drained on a bad system?—Even taking that case of mine, it would have been much better for me to have hired that farm all well drained, and to have paid for the unexhausted portion of the drainage, than to have taken it as I did.

The answer you gave before was understood to be,

that part of this land was badly drained. Do you think it would have been fair upon you as the in-coming tenant to have paid for the expenses of drainage which had been badly done?—I think men in these times would not have anything badly done in the shape of drainage; their own interests would induce them to have it well done.

Taking your own case, you stated that you entered upon the farm when the drainage was badly done. The question is, whether you do or do not think it fair upon the incoming tenant to pay for the expenses of drainage done by the previous occupant, and conducted on a bad system?—In that case, any one who valued it for the compensation would see the way in which it was done, and value it accordingly.

You were understood to say that you considered that the incoming tenant was liable for the expenses that had been laid out in drainage?—I say unexhausted improvements, and no man would contend that bad drainage was an unexhausted improvement.

Then your answer is to be understood to apply to improvements as to the increased value of the land, and not as to the cost of the outlay that had been made upon the land?—That would bear a proportion to the expense, of course.

Mr. HENLEY.] You have stated that, in your opinion, a law ought to be made to over-ride private agreements?—Exactly so.

Do you extend that to land?—Yes.

It is a great principle, you say, because you state that in your opinion the law ought to be made to over-ride private conditions of agreement?—I think it was as to custom.

As to both agreement and custom, the answer was. Do you think it would be better for the tenant and the landlord to agree, or to have a law made that should over-ride the agreements that they had made?—If you do not have a law to over-ride those agreements, it is not of any use.

That being so, would you extend that principle to settling the rent between the landlord and the tenant, as well as the condition of holding between the landlord and tenant?—Certainly not.

Sir J. TROLLOPE.] Do you hold under a lease?—Yes, I do.

Has that lease any conditions attached to it as to the mode of cultivation?—Yes, it has conditions attached to it.

Then could you, under those circumstances, having conditions attached to your lease, farm upon a worse principle for the remainder of the lease?—No, I could not cross-crop that land; but I could cease that expenditure of £100 a-week for artificial food, and £600 a-year for bone-dust, and £200 or £300 a-year for guano, and the same for rape-cake. All those expenses I should stop.

You say it would be the preferable mode of renewing leases, that they should be renewed four years before the expiration of the lease?—Yes, I think it would be better for both parties.

Are you aware that a large portion of the lands of England are in strict entail or settlement?—It may be so.

Would the law allow a tenant for life to make a prospective lease four years before the lease expire, when his own life might expire before that period of time?—I think you could only give compensation for tenant-right, you cannot interfere with the time for which the land might be let.

A tenant for life cannot fix his successor by his requirements? Then it becomes more necessary to pass a law for the purpose.

Then that would over-ride all settlements and entails, and in fact over-ride the law of property? You would give a great benefit to the country.

Do you think that would be beneficial? Yes.

Do you know that a tenant for life could not grant a lease four years prospectively? Not longer than for his life, I suppose.

Therefore, if his life dropped before the end of that four years the lease would be void? Yes.

That would place another difficulty in your way? Yes.

Are all the leases in Cambridgeshire of a similar nature? I only speak to my own.

Do you ever act as a valuer? No.

When you enter upon a farm under lease, what is the valuation between you, the incoming tenant, and the outgoing tenant? It would be for the tillage of the land, for the unconsumed hay on the farm, taking it at the consuming price, and generally we have a right to consume the last year's crop of straw on the premises; that is generally taken by the incoming tenant for the expense of thrashing the corn, and taking it to market.

Are yours all Michaelmas holdings? Yes, in my neighbourhood.

There is no away-going crop? There is no away-going crop.

Have you inclosed your land? It was inclosed before I went on it; it was not done at my expense.

Do you know as a fact that any English tenants have gone to reside in that country you have spoken of? No.

None have been tempted to go from England to the climate of Russia from the lower amount of the rents? No.

You are aware of the nature of the climate of that country? I think a portion of that climate is equal with that of England.

You have not gone there, and do not intend to go? No.

CHAIRMAN.] — You have stated in answer to a question, that there is no difficulty in a tenant making an agreement for tenant-right for improvements, with the fee-simple landlord? Of course not.

Are you aware whether there is any large proportion of the country held by fee-simple landlords? Where the fee-simple is in the entire possession and control of the owner, it is only in the small properties in this country, not the large settled estates.

Is not it also unfortunately not unusual in those small properties that there are mortgages upon them? I should say in many cases that may be so.

Do you know in that case whether the landlord can make those agreements without the consent of the mortgagee? I am not aware; if it should be so, it would be more necessary to have the law I have spoken of.

(To be continued.)

THE IMPOLICY OF LOW WAGES.—Mr. E. Chadwick, at one of the ordinary evening meetings at the Institution of Civil Engineers, London, where the subject of street cleaning was discussed, observed:—"Parochial mud labour, being performed reluctantly, and without interest, is *quasi* slave labour; and, like all slave labour that he had examined, it was in reality dear labourer. It was a fact, that the labour of the independent labour, who were paid double wages, was cheaper than that of these pauper labours. For instance, the price of sweeping Pall-mall by paupers was 5s. 10d., but by free workmen (and by no means the highest class) it was only 2s. 6d. The pauper was paid 1s. 10d. diem, the independent labourer 2s. 6d. The most intelligent surveyors of roads had declared to Mr. Chadwick their conviction of the error of the parochial policy, and the really greater expense of the ill-conditioned and inferior labour."

THE SMALL-POX IN SHEEP.

The serious consequences which the small-pox must inflict upon the flockmaster whose sheep may be visited by the disease, render it absolutely necessary that the penalties given by the Act of Parliament passed in the last session "to prevent the spreading of contagious or infectious disorders among sheep, cattle, and other animals," should be rigidly enforced. We therefore embrace the earliest opportunity of calling attention as prominently as we can to the first case of conviction which has come under our notice, and which is reported in the *Norwich Mercury* of Oct. 21. It appears that a charge was preferred at the petty sessions for the City of Norwich, on the Tuesday previous, by the Inspector of Police, against Mr. Edward Betts, a salesman who regularly attends the Norwich cattle market, for having offered for sale in the market a number of sheep (we believe 200), knowing them to be infected with small-pox. It was proved by Mr. Smith, the veterinary surgeon, who is inspector of cattle appointed under the Act of Parliament, that he examined several of the sheep in question, and found that they had been inoculated, but had not recovered from the effects, there being a slight discharge from some of the pustules, which was likely to promote contagion. The fact of inoculation was admitted by Mr. Betts. This case is a very important one, as it involves not the mere question of offering diseased animals for sale, but whether sheep, after being innoculated, and before they have properly recovered, may be brought into a market, and at what period they may be considered to be completely recovered. Mr. Smith stated, in reply to questions put to him—

By Mr. Johnson.—"It is not certain when the vesicles are at their height. Sometimes it is between the 14th and 17th days, but that depends upon the constitution of the animal. I did not see whether there were any pustules in other parts of the sheep. Judging from the appearance of this crust, the produce of an inoculated vesicle, I should say the sheep had been inoculated between four and five weeks. [Mr. Smith produced a pustule taken from one of the sheep, which he exhibited to the Bench of Magistrates.] Sheep are inoculated from lymph taken from animals which had the disease, for the purpose of producing the specific disease in a mitigated form. That pustule might have given the disease to other sheep. That inoculated sheep should be kept from other animals for some weeks after being inoculated, as the disease may be communicated from the effluvium from the wool, unless the sheep were washed with a weak solution of chloride of lime, chloride of zinc, or some other disinfecting agent. Inoculated sheep should be kept apart for about six weeks."

By Mr. Jay.—"In my opinion the disease may be communicated by the effluvium from the wool after inoculation."

Mr. Johnson.—"I can fully bear that assertion out. It is precisely the same with cattle as with man. I have known the disease to be communicated to other persons from the effluvium from blankets."

By Mr. Hudson.—"Sheep were inoculated from lymph taken from animals labouring under the disease, so that they might have it in a milder form. Sheep should be inoculated with lymph, the produce of the vesicle of variola ovina. He believed that impure matter had been used by inexperienced persons, which had produced gangrene of the parts and virulent disease."

Mr. Jay.—"Do you not know that vaccination has been tried, and found unsuccessful?"

By Dr. Evans.—"The process of inoculation in sheep is the same as that pursued amongst mankind."

Mr. Johnson.—"When you inoculate the sheep for the small pox you give them a contagious disease in a mitigated form, and they should not be mixed with others until they have quite recovered from the inoculation?"

Mr. Smith.—"Exactly so. If such sheep were brought into contact with others too soon after inoculation, they would communicate the disease."

Mr. Jay.—Is the disease, after inoculation, communicable?"

Mr. Smith.—"It is."

Mr. Hudson.—"Everybody knows that, who has read Dr. Jenner's works."

A farmer who had offered money for the sheep was called, and stated that he did not believe that the disease would be communicated by the sheep in their then state, and that he was willing to take them and turn them amongst his flock. It was, however, remarked upon this, from the Bench, that if he chose to be so "fool hardy," that could have no influence on their decision.

The magistrates treated the case with great liberality, it being the first brought before them, being actuated by a desire to warn persons against the consequences of infringing the law, rather than to press heavily upon the first offender. They therefore fined the defendant 40s., and £1 12s. 6d. costs; at the same time observing, that "should any other case be brought before them, they were determined to mark their sense of disapprobation of exposing such animals for sale, by inflicting a much heavier penalty." In the course of the enquiry,

Mr. Johnson said "he wished, for the purpose of preventing sheep in that state from being removed from place to place, to know where they had been removed to after being taken out of the market."

Mr. Smith.—"I can only say they were taken off the Hill."

Mr. Johnson.—"Such animals should not be removed, as they might infect a great number of other sheep. It is quite clear they were in an infectious state, and might have spread the contagion half over the county."

To this inquiry no explanation was given; and

doubtless, as Mr. Johnson observed, these same sheep may be instrumental in spreading the contagion.

There was one statement made by Mr. Smith, which is especially deserving of notice. In the course of conversation Mr. Betts, the defendant, remarked to him, that "there was not so much fuss about the disease in other markets; he could sell them at Keninghall, or other places." Now, it will be manifest that the praiseworthy vigilance exhibited by the authorities at Norwich will be of comparatively little avail if the like attention be not given to the subject in other places.

The public may be assured that this is not merely a farmer's question. The consumer is quite as much interested in the subject, whether as regards the supply of wholesome meat, or the cost at which it may be obtained. The prevalence of any permanent and general disease which shall increase loss and occasion expense to the producers must, upon commercial principles and practice eventually fall upon the consumer. There is no country in which this disease could inflict such general evil consequences as in a meat-consuming country like England. In proportion to the evil results to be apprehended should be the vigilance used to stay, and if possible, to rid the country of this scourge. We are not ambitious of the title of informer, but we should not hesitate to give information against any one whom we should see in the act of inflicting such a serious injury upon his brother farmers, and the country generally, by contributing to extend the disease. With a view, however, to prevent its extension by importation, we would again revert to the recommendation which we gave when the disease first made its appearance, that all foreign sheep imported should be forthwith slaughtered. If we require a foreign supply of meat, let it be dead meat.

EAST SUFFOLK.—REPORT OF THE COMMITTEE ON UNDERDRAINING.

In presenting their second annual report, your committee beg leave to submit for the consideration of the members of the association the following particulars:—First, that in accordance with their instructions, they have taken a personal view and enquiry into several localities, as to the manner in which this very important operation has been performed, as also the cost per acre; and although the tile draining done under the immediate inspection of Mr. Parkes, at Sibton, in the opinion of your committee, cannot be surpassed in point of execution, still your committee have pleasure in subjoining a statement of two instances which came under their notice, as well deserving especial attention, viz., upon the farms of Mr. Robert Crisp, at Leiston Abbey, and Mr. Robert Bond, at Sternfield.

Mr. Robert Crisp, Leiston Abbey. — Distance between the drains, 23 feet; depth of drains, 36 to 38 inches; number of rods to the acre, 115; number of pipes required for an acre, 1,900; cost of pipes per 1,000, 12s., exclusive of cartage; cost of cutting drains per score rods, 4s. 6d.; cost of laying pipes and floor per score rods, 8d.; cost of filling per score rods, 4d.; cost per acre for pipes, £1 2s. 8½d.; cost of tiles for main drains per 1,000, 17s.; cost of digging drains per acre, £1 11s. 7d.; extra cost per score rods for digging main drains, 10d. Cost of draining an acre of land, with 1½ inch pipes, 12 inches long, the drains being 23 feet apart, and from 36 to 38 inches in depth:

Digging 20 rods	4s. 6d.	
Laying pipes and floor of drain	0 8	
Filling in	0 4—5s. 6d. per score rods.	
Average depth, 3 feet 2 inches.		
Digging 5 score and 15 rods, at 5s. 6d. per score	£1 11 7	
1,900 pipes, at 12s. per 1,000 (1½-inch.)	1 2 8½	
	2 14 3½	
Extra for digging:—Rods main drains, at 10d. per score over and above the aforementioned cost of 4s. 6d. per score rods. Ditto, extra cost for larger pipes for main drains. Cartage of pipes	0 10 4	
	£3 4 7½	

One man and a boy (4d. per day) will lay tiles for 6 men, doing about 3 score rods per day.

Mr. Robert Bond, at Sternfield.

Drawing drains with plough and horses, per score of 20 rods	0 1 0
Manual labour, clearing out furrows ready for draining out the first spit, and laying pipes	0 1 6
Digging 2 broad and 1 narrow spit, of 12 inches each in depth, and filling in 2 spits	0 6 6
Plough and horses and manual labour to complete filling the drains	0 0 6
	£0 9 6

Cost per acre, average depth 3 feet 10 inches to 4 feet, intervals between the drains 28½ feet.	
4 score 8 rods, at 9s. 6d. per score	£2 2 0
1,500 horse-shoe pipes, at 17s. per 1,000..	1 5 6
Cartage of ditto, at 2s. per 1,000	0 3 0
	£3 10 6

In conclusion, your committee desire to express their decided conviction that there is no material for filling drains to be compared to well-made pipes, of not less than 1½ inch diameter; that to ensure safety, the roots of large trees must be avoided at least 30 feet; and that in no case should the pipes be laid nearer the surface than 36 inches. (Signed.) Corn. Welton, George Bond, Thomas Roberts, jun., and Thos. Elvin Capon.

CHESHIRE AGRICULTURAL SOCIETY.

At the last meeting of this society Mr. BRADY, the Inspector of Farms, read the following observations :—

Premium No. 1, for the best-cultivated farm, not less than 150 acres, awarded to Mr. W. Palin, Stapleford Hall.—This farm contains 250 acres, of which 130 acres are pasture, 35 acres are mowed, 80 acres ploughed, and the remaining 5 acres are occupied by garden, orchard, homesteads, roads, &c. The customary rotation of cropping on this farm, beginning with the first year after grass or clover-ley, is—oats, wheat, green crop, barley, and laid down with seeds for four years. The stock at present kept on this farm are 17 horses and colts, 26 dairy cows, 26 heifers, 12 rearing calves, 276 sheep and lambs, and 40 head of swine. The claimant says that his present stock of cattle is only half the usual number, in consequence of his recent losses by "pleuro-pneumonia." The various descriptions of cattle above enumerated are kept during the year entirely on the produce of the farm. The wheat which was drilled after oats is an excellent crop, standing well, very clean, and likely to yield a considerable quantity per acre. I think it equal to any crop I have seen during this year. The oats sown after ley are a good crop, not quite clean, a few sow-thistles appearing among them; those sown after wheat are clean, rather late, but a very heavy crop. The barley an even, good crop, and clean. The potatoes are looking clean, and well managed, but exhibit strong symptoms of disease. The turnips are late-sown, but clean, and in a good state of management. The mangel-wurzel bids fair to be a satisfactory crop; it is clean, and otherwise well cultivated. The meadows appear luxuriant, and the dung-water produced on the farm is judiciously applied on some of them by skilful irrigation. The pastures are particularly good, abounding in superior herbage, and certainly capable of carrying much more stock than I saw upon them. The hedges do not present a neat appearance, being untrimmed and wild, and the ditches are not cleared out. I attribute part of this neglect to the excessive quantity of injurious hedgerow timber with which this farm abounds. A considerable portion of the pastures on this farm have been bone-dusted, and I did not observe any part of them requiring draining. This latter operation has been performed at a former period. The garden, orchard, house, and homestead are excellent and well-arranged, and their general neatness and good order is highly creditable to the claimant.

Premium No. 2—For the best cultivated farm, not less than 80 acres, awarded to Mr. John Swinton, Marston. This farm contains 123 statute acres, of which 48 are pasture, 38 are meadow, 13 are oats, 5 are wheat, 11 are potatoes, 7 are fallow, and the remaining 1½ acre is occupied by garden, homestead, roads, &c. The customary rotation of cropping on this farm is wheat, oats, clover, potatoes, and turnips. This farm is held under a fourteen years' lease. The stock at present on the farm is 24 milch cows, 1 bull, 9 stirks, 4 calves, 3 horses, pony and foal, and 8 large store pigs. These are kept on the produce of the farm. The farm is a black soil on a strong clay. The pastures on this farm are good for the quality of the soil; 28 acres of them have been bone-dusted at the tenant's sole expense, but the quantity put on was too little to be very effective, or as lasting as is desirable, but enough has been done to convince the claimant that he expended his money profitably. The draining on the farm has all been done solely at claimant's expense, and amounts to 42 acres in all, most of it on the cross or herring-bone system, and therefore not so effective as otherwise it would have been. Claimant has done one field on the up and down plan, and finds it answers much better. The landlord is now supplying him with tiles, and he intends during the next two winters to drain the remainder of his farm. The wheat is a good crop, standing well and tolerably clean. Oats: Part of these ten acres are a very full crop, seeded down, the remaining three acres poor. Potatoes: Part of these are taken up and sold, and the land sown with turnips; the others are a poor crop, very full of weeds, and late planted. The fallow is as good as the season will permit, but cannot be properly cleaned this year. Meadow: Under this head I include ten acres of clover, an excellent crop. This was bone-dusted on the young seeds, and manured with ten tons of compost manure per acre. The grass meadows want draining, but are a good description of herbage, and the stack yard gives evidence of their having produced a good crop. The dung water is most judiciously applied by irrigating a field near the house, and the whole of the impurities of the yard and the house are made properly available. The house and outbuildings are tolerable, but not kept with as much neatness as is desirable. The implements are of a proper description, and are ample for the farm, and in good order. The claimant has within three years filled up and made into land nine pits; he has eradicated 689 yards of old fences, averaging four yards wide, in a workmanlike manner; he has planted new and removed old quicks, and his fences are kept cropped and the ditches cleared out, thereby adding to the good appearance of the farm. He has also made a narrow rough lane leading to his house into a good accommodation road. On the whole, I think this farm is under good management and the claimant a very deserving and persevering tenant

Premium No. 5.—To the tenant who shall have expended the largest sum in the purchase of bone manure in proportion to the extent of his farm, was awarded to Mr. Thomas Jones, Wardle Hall. This claimant's farm contains 340 acres. He took possession of it in the beginning of the present year. He has a lease of 21 years. He has covered 59 acres with boiled bones, and has carted into different fields, containing 63½ acres, the bones intended to be put on them, making a total of 112½ acres, and 133 tons of bones. These bones have been but a short time on the land, commencing about April last; but the effect already produced is most encouraging, and will doubtless amply repay the claimant. The cost of the bones, including carriage, is £600, or £5 7s. 1½d. per acre. Average, one-third of the farm.

Second Prize.—The second premium was awarded to Mr. Thomas Moreton, Marton Hall. This claimant's farm contains 210 acres. He has no lease. He took possession of it in the beginning of the present year. He has covered 41½ acres with bone sawdust, of which material he has used 11 tons, at a cost of £7 per ton. He has also covered 50½ acres with boiled bones, at a cost of £3 15s. per ton. These bones have all been put upon grass land, and are already effecting very great good. The total cost of this improvement is—

41½ acres covered with bone sawdust.....	£78	7	3
50½ ditto ditto boiled bones	164	5	10
Carriage	11	0	0
92 acres bone-dust, at a cost of	£253	13	1

or £2 14s. 9d. per acre. Besides the cost as above stated, the claimant carted them six miles from the wharf to his farm. Average, seven-sixteenths of the whole farm.

Premium No. 7, to the tenant who has expended the greatest sum in draining within one year, awarded to Mr. Ankers, Huxley Farm. This claimant's farm contains 163 acres, held from year to year. It is a strong loam, on a very strong and retentive clay. The drains are laid in the reins, and vary in consequence from 8 to 4 yards apart, the general depth is 28 and 30 inches. One field of 3 acres is drained 10 yards apart, 33 inches deep, and is acting well. The whole of this draining has been done at the claimant's sole expense, he pays for tiles as well as labour. The work is well done, and appears to be effecting great good. The length of drains is 32,792 yards, or 18½ miles. Labour and tiles £174 19s. 4d., land drained 30 acres.

Premium 8, to the tenant who shall have irrigated the greatest quantity of land, according to the extent of his farm, within the last three years, awarded to Mr. Thos. Hignett, Stapleford. The farm on which this irrigation has been done consists of 60 acres. The meadow irrigated is 10½ acres. The water used is from a constantly running brook, which forms one side of its boundary. It is an oblong field, very narrow at the upper end, where the water is headed up by means of a sluice-gate or shuttle, at pleasure, and led over the whole surface of the field in a very ingenious and scientific manner. The brook is fed by the surface water from the hills on each side of its course, and consequently abounds with alluvial and other soils; and being judiciously introduced and retained on the field, has produced an astonishing improvement. The crop of hay this year was extraordinarily great, although the field was fed with young cattle all the month of April. The cost of this was £70; and I think it an excellent investment.

The other claimant was Mr. Woolf, of Haslington Hall. His farm contains 457 acres, and is held on lease. The quantity of land irrigated is 11 acres, at a cost of £40. The whole of the manure water is brought into use, and mixed with a bountiful spring of water, which rises on the farm, and is very scientifically conducted over the surface of 11 acres of very porous soil. The number of cows and horses kept on this farm is about 100, and the dung water made from so large a stock is particularly valuable. The claimant has succeeded in making it all available at a very little cost. This job has been completed since the beginning of the present year, and is producing an astonishing effect, which is most satisfactory to the claimant.

Premium 12, for the best constructed tank for liquid manure, awarded to Mr. Samuel Dobell, Acton.—This claimant's farm contans 70 acres, and is held under a 21 years' lease. The stock upon it is 24 milch cows, 8 horses, and 38 feeding pigs. The tank is placed outside the buildings, and the liquid manure from the shippons, stables, piggeries, privies, and house, is connected into it by underground drains. A drain also empties into it from the manure heap. It is six feet square inside, and about five feet six inches deep to the waste pipe, which empties itself into a well in the garden, and is there applied. It is covered, and a pump fixed in it, and the water is removed in carts and applied at pleasure. All the work about this tank is well done, and it is well contrived, but it is much too small.

THE AGRICULTURAL COLLEGE OF THE SOCIETY OF FRIENDS, with that eminently practical talent which accompanies even their benevolence, rendering charity scarcely less advantageous in the future than presently serviceable to its objects, are about to establish an agricultural seminary upon a large scale, in perhaps the part of Ireland, where instruction in the cultivation of the soil is most needed by the people. They have, it is said, a sum of £50,000 on hand, collected for this purpose, and with which they intend to purchase a farm of 400 acres in Roscommon, which will be cultivated according to the most improved system, and where the neighbouring peasantry and farmers will be practically taught those lessons indispensable in our present social condition to the maintenance of the population. This model farm, with which an agricultural seminary and museum will be joined, will be superintended by Dr. Bewley of Moate, a gentleman who to great practical skill as an agriculturist joins intimate knowledge of the habits of the people. The doctor is at present on a tour through the best cultivated districts of England and Scotland, in order to become acquainted with the methods of improvement. He will be stimulated to develop the full advantages of the new institution by a salary of £300 a year, besides half the profits of the farm.

AREA AND POPULATION OF THE VARIOUS STATES OF EUROPE.

	Geographical Square Miles.	Inhabitants at the end of 1846.	Per Centage of the whole Area in Europe.	Per Centage of the whole Population in Europe.	Average Inhabitants on One Geographical Square Mile.
1. German Confederation	11,477·67	41,672,375	6·35	15·88	3,631
2. Austria (exclusive of the part belonging to the Confederation)	8,509·09	24,828,079	4·71	9·52	2,918
3. Prussia (exclusive of ditto)	1,714·56	3,863,822	0·95	1·49	2,253
4. Russia (as far as the Ural and Caucassus)	99,489·41	64,865,000	55·06	24·87	652
5. France	9,616·90	35,050,000	5·32	13·44	3,555
6. Great Britain and Ireland	5,754·91	27,905,000	3·19	10·70	4,643
7. Netherlands	546·30	2,829,035	0·30	1·09	5,178
8. Belgium	535·91	4,335,319	0·29	1·67	8,089
9. Denmark (with Schleswig)	846·40	1,729,976	0·47	0·67	2,044
10. Sweden and Norway	8,004·76	3,338,504	4·43	1·28	417
11. Switzerland	752·00	2,411,608	0·40	0·93	3,008
12. Portugal	1,659·37	3,260,693	0·92	1·25	1,965
13. Spain	8,446·90	13,077,997	4·68	5·02	1,548
14. Italy	4,787·00	19,070,869	2·65	7·32	3,984
15. British Possessions in the Mediterranean Sea	54·95	357,010	0·03	0·14	6,497
16. Greece	652·69	957,003	0·36	0·37	1,466
17. Turkey	12,210·10	9,949,226	6·76	3·82	815
18. Montenegro	60·00	111,280	0·03	0·04	1,855
Total	180,689·92	260,866,694	100·00	100·00	1,444

A VISIT TO AN EXPERIMENTAL FARM.

A number of agricultural gentlemen, friends and tenants of W. W. Whitmore, Esq., met a short time since, by invitation, at Dudmaston, and inspected his estate. Among the visitors present were Sir F. Lawley, Bart., T. C. Whitmore, Esq., M.P., and J. F. Mechi, Esq. *Berrow's Worcester Journal* thus reports the day's proceedings:

"It may be proper here to observe that Dudmaston is situate about four miles from Bridgnorth, in Shropshire, on the road to Kidderminster. Mr. Whitmore has now in his own cultivation over a thousand acres, and has latterly introduced a great many improvements in the way of machinery, manuring, and draining, into his farming operations, which it will become our province to describe.

"The first part of the estate visited was the Oat Farm, in the yard of which Mr. Whitmore pointed out a tram-way, which he found very useful in bringing remote parts of the building together. It was laid down at a trifling cost, and he thought it could be applied with very great advantage to many farms for the purpose of connecting the buildings, which sometimes, from their distance apart, were rendered nearly useless. The manure in the yard is collected together and protected from the action of the elements. An excellent shed was constructed, with a substantial slate roof, under which the manure (good farm-yard dung) is placed, and therefore well protected from rain. The whole of the liquid portion of the manure is carefully drained off into a well, and a strongly-constructed iron pump is employed to raise it as required. The importance of thus preserving the liquid manure is now becoming well known; and the effects of it in one particular instance, which we are about to relate, will be quite sufficient to convince the most prejudiced or most indolent farmer of the great loss he sustains by not being particular enough in this respect. How often do we see, even now, a heap of stable dung piled up, exposed to the atmosphere, liable to all the action of rain and other deleterious agents, poisoning the air around it, and giving off in large quantities one of the most important of its properties, in regard to the enrichment of the land, namely, ammonia! Every one who goes by a heap of decomposing stable dung must perceive, by his olfactory nerves, the great quantity of ammonia that is being wasted; and the experience of Mr. Whitmore, and other eminent agriculturists, fully shows that, in point of expense, the proper collecting and saving of manure is one of the most profitable things that the farmer can possibly do. Passing across two or three fields the company next proceeded to inspect the small portion of land under the cultivation of the boys of the Industrial School at Quatt establishment. The present state of this land is an admirable instance of what may be effected by spade husbandry and liquid manure. This school, which is connected with the Bridgnorth Union, was founded a few years ago, and without touching upon its principle with respect to the moral training of the juvenile pauper population, we proceed to give a short description of it. This school is exclusively for the instruction of the pauper children of the union. They often amount to sixty in number; the object not being to get rid of them as soon as possible, but to give them such an industrial training as may remove habits of idleness and incapacity which are productive of future pauperism, and to facilitate the means of a permanent and independent livelihood when they leave the school. For this purpose the children of out-door paupers are sometimes admitted. A private dwelling-house has been taken for the establishment, in a rural village four miles from the workhouse, with about four acres of arable and half an acre of meadow land. About fifteen boys cultivate this land, and attend to the stable, cows, and pigs; not quite so many girls are instructed and employed in household work, sewing, baking, washing, and the dairy.

"The afternoons are wholly devoted to industrial labour, and the mornings chiefly to school instruction, in which the attainments of the children are very superior to those of most workhouse schools, where no industrial training exists. A net profit of above £65 resulted from the farm during the last year. It is worthy of note that this large produce is owing to the quantity of liquid manure applied to the land, and which is derived from the drains of the house, together with all refuse matter suitable for the purpose, collected in one large cesspool constructed to receive it, whence it is drawn out in pails as it is required.

"Leaving the industrial farm, the company then proceeded to view Park-farm, a place of about 200 acres, part of Mr. Whitmore's estate, but which he has only lately taken in hand to cultivate himself. On this farm Mr. Whitmore has commenced an extensive system of draining on clay land, one field of which the party inspected. Mr. Whitmore had tried to drain that land before with drains thirty inches deep, but found it useless, and that the money so expended was quite thrown away; he had consequently determined to lay down drains five

feet deep, which he was at present doing. The drains were fifteen yards apart; eighteen inches open at the top, there being just sufficient room for the men to cut them; and gradually decreasing the width to the bottom, where there was just room enough to lay the pipe. Although not half of the pipes were laid, a great deal of water was already emptying itself at the outlet for that purpose. Mr. Mechi stated that the improvement in cutting drains had been immense during the last few years; for, until lately, in Essex, and other counties where a drain was required to the depth of five feet, the men would open it out at the top at least three or four feet, and would not be persuaded that it could be done better. When he suggested an improvement in the mode of cutting in that respect he was quite laughed at by all practical men, who ridiculed the notion of its being done by opening out so little as eighteen inches or two feet; but he was happy to say that a great many farmers, both in this part of the country and elsewhere, had now got over that prejudice. Proceeding through two or three fields, the next thing that occupied the attention of the company was the process of charring on foul stubble land. With respect to this, Mr. Whitmore said no one having foul land could over-rate its importance. The charred matter was most valuable as a manure. He calculated that upon foul land there were thirty bushels of this weed and stubble to the acre, and on clean land about ten; and his gardener had told him that he considered that material, when charred, to be the most valuable manure that he could obtain, and if he could always obtain it he would never use any other. Mr. Whitmore also said, that though he would not certainly recommend farmers to grow weeds merely that they might char them afterwards, yet he would strongly impress upon those who were annoyed with them, which they all were in some degree, to get rid of them in this way. It was a much preferable plan than entirely burning them, in consequence of the excellence of the charcoal-like deposit as a manure. Another principal and very important consideration in thus disposing of the weeds, was that the seeds by this means were perfectly destroyed; it frequently happened that if this sort of stuff was put in heaps to rot and decompose, by some extraordinary power they possess of resisting putrefaction, the seeds appeared to retain their vitality, and when the farmer spread the manure upon his land he also sowed the seed of those very weeds which had formerly been the cause of so much annoyance to him.

"The next thing to which the attention of the company was called was the mode of irrigation pursued by Mr. Whitmore. The water is brought round by the side of a hill considerably above the level of the meadows which it irrigates. Originally it was intended for the purpose of working a mill, which it does at present, as we shall have occasion to mention. From this upper stream of water channels are cut, by means of which it is brought down into open trenches in the meadows, which can be replenished at pleasure, and, by means of a very simple contrivance, the water at any time can be excluded. Mr. Whitmore said, in relation to these fields, that hay had been taken off them from almost time immemorial without the slightest quantity of manure being put on the ground, and the crop had got down to about a ton per acre. Since he had irrigated the land, however, he had fed 500 ewes off it, and afterwards obtained a crop of hay averaging two tons per acre, without any manure being used. Occasionally this meadow was overflowed by the Severn; but from what we heard the farmers observe, this was considered to be rather against than in its favour. The trenches, which were full of water, were about 15 feet apart. Mr. Whitmore mentioned that he thought of increasing the supply of water, and he calculated that for an expenditure of £200 he could obtain a supply of about half as much again as he had, that would enable him to extend his irrigation for all present purposes, and by that means he hoped to improve the land very considerably. On some one remarking on the cost of all these improvements, Mr. Whitmore said he always considered in farming, it was not a question of what it costs, but whether it will pay; and if it yielded a return for the money, it was a good application of capital. What he wanted was to make that good land, and he thought the best way to accomplish that object was by feeding and breeding upon it. For that purpose he caused the mill which they would presently visit to be erected, in order that he might have always the appliances and means close at hand to make all the processes of the farmer available to the greatest extent, taking especial care in the whole of these proceedings not to lose sight of the great farming manufacture—that was, the manufacture of manure. He believed till that was carried out to its fullest extent they would never know the capabilities of land for producing, and would never derive from it all the crops that they might. His object, therefore, was first to water the land, and after that he believed the whole science of farming resolved itself into a question of manure. After hearing that explanation, the company proceeded to view the mill, which was fitted up with machinery constructed for the purpose of grinding wheat, for thrashing, winnowing, chaff-cutting, and a great variety of other purposes; in fact, all the indoor operations of the farmer and miller are here comprised in one building, and the completeness of everything appeared to give satisfaction to every one present.

"The party afterwards returned to the house, where they sat down to an excellent dinner."

SPROTBROUGH FARMERS' CLUB.

THICK AND THIN SOWING.

This club held a meeting on the 21st Sept., at the house of Mr. Avery, Sprotbro' Boat. The attendance of members was large. The Rev. J. G.Fardell occupied the chair. After some minor business, the subject chosen for discussion—"The Growth of Wheat"—was brought forward. The discussion refers to limestone soils, the general character of the district in the management of the members.

The CHAIRMAN, in introducing the discussion, said that since they had last met he had been induced to refer to several works on the subject chosen for debate, and although he had previously thought it was one in which there could not be much difference of opinion, he had nevertheless found it to be more difficult than he had anticipated. This had induced him to look further into the subject, and there was a great diversity of opinions, so much so that it would be amply sufficient for that evening's consideration. The subject of the growth of wheat he had divided into the following heads, viz., the preparation of the land, the application of manure, the time of sowing, the treatment of the crop, and the diseases to which it was liable. With respect to the preparation of the land, he might ask, where could corn not be grown? There was no land, he believed, which might not be made to grow corn. By the use of artificial manures they were almost enabled to approximate it to good land. The land of Lincolnshire, so famed for heavy crops of corn, was strong clay. The land here by artificial appliances might be made to produce a crop fully equal to that of Lincolnshire. The great secret seemed to be in the draining, cleaning, and manuring of the land. Much also depended on the change of seed from a warm district to a cold one, and *vice versâ*. He also found that they generally sowed wheat after clover, and when the clover failed the wheat failed also. Why plant wheat, he said, when it was certain to fail? The chairman then referred to the application of manures, glancing at their different effects, of the change effected upon wheat that was yellow by nitrate of soda and potash; the time of sowing; the management of the crop, and the diseases to which it was liable, showing that smut might be prevented by using proper steeps for the seed.

Mr. HICKSON (of Sprotbro') thought the quantity of seed, upon which there was at the present time so much discussion, should be included in the chairman's division of the subject.

Mr. THOS. DYSON, of Braithwell, said he could speak as to the quantity of grain to be used, since he had had a little experience. He had formerly been much astonished at the great crops obtained from so little seed. At the late agricultural meeting at York he dined with Mr. Mechi, and after hearing his explanations, he could not go with him. Awhile ago he got some seed from Scotland, and he had it dibbled at the rate of one bushel per acre, and with it he had put a ton of rape-dust for each acre; he had a capital green crop, but a very bad one of wheat; he had found six pecks per acre, dibbled, nearer the mark, and nine to ten pecks when sown broadcast on clover ley. He was told that Lord Lonsdale had used only a peck of barley per acre, and had a good crop. He had certainly never met with such success. It was very material that the land should be properly prepared; and in the application of manures they must be guided by the different sorts of soil. He had a case in point. Speaking to a gentleman the other day, he said he had found guano in one place do wonders, and in the other fail. The cold part succeeded, but the hot did not. The time of sowing varied with the soil. In their cold soils he thought they could not have their seed in too soon. In reference to the remark on change of seed, he observed that last year he obtained a quantity from Hounslow, near London, and some also from Stirling; the one being the wheat known by the name of the "Chidham," and the other that of "Scotch brown." The seed which came from the south was ripe much earlier, and the crop appeared also decidedly better than that which came from the north. The Chidham was a beautiful wheat. Both were sown in the same week, being dibbled at the rate of six pecks per acre. There was a great difference as to the time of maturity. He was confident that the south seed was always much earlier than the northern; and he had tried two or three different sorts. The treatment of the crop required great consideration. He was quite a convert to dibbling or pressing, as the best mode of depositing the grain, which gave them a chance of hoeing it. The diseases to which wheat was liable were counteracted by the steeps used; and to show the effects of neglecting this practice, his men at sowing-time, being short of seed, took a few pecks unprepared. This portion of the crop was entirely smutted.

Mr. NEWHAM, of Edlington, was next called upon. He said, as to the quantity of seed he sowed, he would be considered extravagant. He could, however, never understand the question of thin sowing. For his part, he was satisfied with Mr. Dyson's experiments, and was content in the fore part of the season to sow nine to ten pecks per acre. Afterwards he was regulated by the state of the land. Again, if the season had been one in which the corn had sprouted, he sowed more, as it was a well-known fact that after the grain had once sprouted, it would not do so again. As to the preparation of the seed, their Chairman had spoken of the good effects of salt, and he had no doubt many adopted it as their steep. He found a preparation from mercury, sold by the druggists generally, decidedly better than salt. If they had too much salt, and wet weather followed, the seed would never

grow. He was, therefore, favourable to this preparation from mercury, as it was less dangerous; and directions were given with it for the quantity necessary, according to the amount of seed. By it they would never have any smuts; and farmers had no right to them, were their seed properly prepared. In the preparation of the land, his impression was that it required a series of years to get land into a proper state for growing wheat. It was quite true that all tillages, or nearly so, did good; but his aim was to get a good crop of seeds, and have them depastured by sheep. This would do more good than any artificial manure they might apply. It frequently occurred that small patches missed, that the clover ran away. On these parts he put rotten manure, bone-dust, or rape-dust, and by them he found the following crop of wheat grow all alike. If, however, this plan was neglected, there would be no wheat on these patches. Land ought to be prepared a considerable time before it was sown with seeds. If a good crop of turnips was obtained, eaten off by sheep, and a barley-crop following, with seeds next, he thought the land, provided it was clean, sufficiently prepared to bring a crop of wheat as large as their land would produce. He could not speak with confidence as to the precise period for sowing. It generally occupied him six weeks in sowing. The time of sowing should be equally regulated by the season as the quantity of seed to be sown. Sometimes he had found the early sown, and sometimes the later sown, the better crop. In the treatment of the crop he should say if there were any weeds he would have them taken out; but when their land was in good order they would not have many weeds. Crosskill's clod crusher was of the greatest value. Two years ago he left a portion of one field unrolled. It was full eight or ten days later at harvest, if he had allowed it to remain: and twelve bushels an acre less than the other part of the crop. This year, on account of the wet weather not permitting his getting the roller on to the land, he had suffered very materially in two fields. He would not recommend a Michaelmas rolling on thin limestone soil; but one at spring. The diseases to which the crop of wheat were liable, would, in a great part, be obviated in the preparation of the seed. Wheat was also liable to blight; but he had no blight where it had been rolled. The mercurial preparation he had before spoken of did not altogether prevent the "blacks." In his own farm he had this year noticed some amongst his white wheat. The cutting of wheat had not been alluded to. He was favourable to cutting it early; and did not allow it to remain until the grain was ripe, when the produce fell out and was lost. He considered by cutting wheat before it was ripe, the quality of the straw was improved equal to the rent of the land. Another matter required consideration. They must change the nature of their seed, as sown on the same land, from red to white, and *vice versâ*; and not sow red or white continually. In the growth of wheat a change of treatment in the manure and the seed was required. In depositing the seed, he considered that if dibbling could be properly done they would get a better sample. He ploughed and pressed his land, and then had the seed sown. He was dissatisfied with dibbling; as the children employed in depositing the seed frequently neglected to do so.

Mr. Thompson, of Braithwell, said all were interested in the growth of wheat; and therefore it was a matter for their serious consideration. Following the division of the subject made by the chairman, he began his observations by referring to the quantity of seed to be sown. This, he thought, ought to be left to the farmer's discretion. He had tried thin sowing, but it did not succeed. He dibbled five pecks per acre, and got quality but not quantity. In the preparation of the land it was necessary that it should be clean, well-ploughed, and afterwards equally well harrowed. As to manure, that depended upon circumstances. In the management of strong land much expense was not required, as lime was all that was generally needed. But lime would not do upon their soils. Bone-dust, rape-dust, and guano, and a large quantity of linseed-cake consumed in their farmyards must be had with them. Much depended upon seasons, and they would defeat any plan. This year the late-sown wheat was best. He found generally a medium between the two extremes most successful, viz., about the last week in October or the first in November. In regard to the treatment of the crop, wheat was always improved by rolling. The early sown of this year's crop, on account of the rain, was prevented being rolled; while that later sown was not so. The later sown stood much better, and was also earlier. Amongst the diseases to which wheat was liable smut was most to be feared. He employed wash and lime, and considered it necessary to prepare the seed in some way. Provided they had thrashing machines he was favourable to cutting the wheat early; but if they had to have it thrashed by the flail, it was necessary that it should be ripe. The wire-worm was very prevalent in some districts. They could not, he believed, adopt a better plan than rolling.

After some further remarks from Mr. Thompson, a discussion on the ravages of the wire-worm, and the attraction the berberry bush *(Berberis vulgaris)* possessed in blighting corn took place.

Mr. Dyson remarked that the wire-worm had been destroyed by spreading rape-dust upon the land, and afterwards rolling it. It was also observed that, if there was any blight at all it was generally found to be so where there were berberry bushes, and on these being removed the blight did not prevail.

In answer to a question from Mr. Wood, Mr. W. Newham said, that if a bean-stubble was clean, and with a supply of rape-dust, he had no doubt a good crop of wheat might be obtained.

Mr. Wood, of Sprotbro', made very truthful statement as to the effects of woods and hedge-row timber upon the growth of wheat and other crops, clearly showing that with these the efforts of the agriculturist in improving his land would be ineffectual. Besides, as he said, where there was so much timber, there also was the greatest disease both amongst corn and cattle.

Mr. Hickson, of Loversall, said the wheat he grew upon his car land he had trodden by men, for which he paid 2s. per acre, it not then admitting of the roller.

Afterwards he had it rolled the reverse way, and by this means the plant became as it were earthed. On a portion of this land he had some Scotch brown seed, obtained from Mr. Dyson, and it had produced a most abundant crop, which was estimated at 16 loads, or 48 bushels per acre. He had found no plan equal to dibbling in depositing the seed. He had not so much straw, but he had an improved quality. His plan was to plough as broad a furrow as possible, and had two rows dibbled on the solid part, not on the loose furrow. By this plan the grasses grew in the ploughed part, and were easily taken away. He dibbled at the rate of six pecks per acre. Earlier the wheat was sown the less seed was required.

Mr. Wm. Newham, in answer to one of the members, said, if he ploughed his land dry, he should sow the seed dry. He ran as many ploughs as pressers, and therefore when they commenced ploughing they began also to sow. If his occupation was small and he was so circumstanced that he could run only one plough, he would plough in the morning and sow in the afternoon, as experience had taught him it was better to sow the seed as soon as possible after the land was ploughed. He was not an advocate for a wide furrow, but a deep one. If the land was ploughed thin, the seed was not so evenly covered as it ought to be, and beside the seed had got more room to luxuriate in. He was not afraid of ploughing the manure too deep, as he believed its effects would not be diminished. He recommended carrying away the earth lying in the furrows where the sheep had generally lain down, and having it evenly spread over the land. This plan would compensate for the trouble, for if this extra tillage was allowed to remain in the furrow the corn in those parts would be too heavy. It soon became lodged, and then rotten. The width of his furrows were about nine inches, and three and a half inches deep. It was desirable that the land should be ploughed and harrowed well, and if possible not have a sod left upon the surface. After some further remarks from several members, the meeting came to the following conclusions on the growth of wheat:—

Preparation of the Land.—The land to be well cleaned, followed by a crop of seeds, depastured by sheep. Ploughed with a furrow eight to nine inches wide, and four inches deep. Heavy land to be as light as possible at the time of sowing, and light to be made as heavy as possible.

Time of Sowing and Quantity of Seed.—These to be regulated by the season and the state of the land. Early in the season nine pecks per acre, and more as the season advanced.

Preparation of the Seed.—The seed to be steeped in the mercurial preparation spoken of.

Treatment of Crop.—To be kept clean, and to be rolled in the spring, with one of Crosskill's clod-crushers.

Time of Reaping.—Early reaping, and not to allow the corn to get ripe before cut.

The subject for the next meeting was then considered, and "The winter feeding of cattle and sheep, and the preparation and storing of their food" determined upon.

After the usual vote of thanks to the Chairman, the members separated.—Doncaster Gazette.

LAW OF SETTLEMENT.

Mr. W. B. West has proposed the following plan to simplify the Poor Law, by abolishing the present Law of Settlement, without changing the present executive department of the present law:—

He proposes that the unions and parishes remain as now constituted.—That the boards of guardians continue to possess the same powers that they now have to administer the law, to determine, as at present, the amount and kind of relief, and to guard the interests of the payers and of the recipients.

That the boards of guardians continue to be annually elected, under the authority of the Poor Law Commission, and that they have conferred upon them the powers now exercised by overseers.

That all officials, such as clerks to boards, relieving officers, collectors, and all others that are required, shall be continued.

That all rates be raised in conformity with the custom exercised in each locality.

That the accounts be rendered, and open to objection by public examination, as now adopted in each union.

That all laws relating to English settlement be abolished, and a general enactment be established by which the incapable, the lame, the blind, and the halt, including every other class of destitute persons, may be enabled to obtain relief, whenever and wherever they may need it.—The Irish and Scotch law of settlement to remain as now existing.

To accomplish this design equitably, it is required—That the average number of male and of female adults be ascertained in every parish or union for three, five, seven, or ten years, or to any extent of time that may be requisite to attain the object by having true data; and the same return of children to be obtained.

That the number of clerks, medical attendants, relieving officers, masters, matrons, and their assistants, with every other paid officer, be ascertained, with their separate salaries attached, for the same length of time.

That a return of the expenditure for buildings, repairs, alterations, additions, furniture, annual outlay for cleansing, supply of water, gas and other lights, insurance, and every other charge thereto relating, be made under separate heads, for the same period of time as other returns; also all sums expended for male and female clothing, household linen, apprentice fees, outfits for service, and every actual charge that can be ascertained, in separate columns.

That the whole of these charges be consolidated in each union or parish, and form the basis upon which all subsequent proceedings be established after the abolition of the law of settlement.

That from these combined sums the amount for the same period be deducted that has been incurred for legal charges in cases of disputed settlement, and also the expenditure for removals of the poor to other parishes or unions.

That an estimate of the cost per head for maintenance of each adult be made, and the same be struck for children: That a similar estimate be obtained for charges of management.

That although changes and fluctuations will arise, consequent upon the alteration in the law, it is proposed that each union or parish shall be considered to retain within itself the number of poor settled by the average of years previously defined.

That each parish or union shall continue to raise the same amount and no more, that would maintain the number in accordance with their own estimate; and that they shall not be called upon to contribute any further sum, notwithstanding they may have had an increase of poor to maintain.

That when increase of numbers occur, the same be provided for out of the funds hereafter described, and payment under authority made to such parish or union where augmentation has taken place, at their own estimate per head for adults and children.

That no union or parish where numbers have diminished pay less than their own estimate, the amount having, in both cases, been settled in accordance with their previous scale of expenditure.

That in those parishes or unions where money has been raised in excess of the immediate demand, such sums to be paid into the Bank of England to the credit of the Poor Law Commission.

That in those parishes or unions where the numbers have multiplied, the additional amount required, in accordance with the expenditure already settled, be obtained under warrant from the funds in excess standing to the credit of the Poor Law Commission at the Bank of England.

That the excess or deficiency be ascertained monthly or quarterly, and that the proofs be examined by the poor law inspectors, and be certified by the auditor.

That should any unexpected exigence occur, and cause a discrepancy in the working expenditure, the further amount be paid out of the public funds, under order of the Secretary of State; or should any calamity arise to obstruct the working of the plan, by reason of food attaining famine prices, such difficulty be adjusted and corrected during the prevalence of such visitation by the prices of grain in the corn market, and settled under the Government returns now in practice.

That as in cycles of time local changes may produce inequalities, these disproportions be adjusted under authority of the Secretary of State by the periodical census, always preserving the relation of poor to the population in each parish or union.

In addition to the advantages of this plan, the writer believes the abolition of the Law of Settlement would effect a saving in local taxation to the amount of about £180,000 per annum (it is possible that £200,000 would not be too large a sum to be stated), an item of interesting magnitude in the estimation of those upon whom devolves the necessity of providing the funds for the maintenance of the poor.

BURTON AGRICULTURAL SOCIETY.

INSPECTORS' REPORT.

The Inspectors beg to lay before you the following report:—

In going through the district, we are happy to find that a spirit of improvement in agriculture is going forward. Farms, where formerly only two acres of turnips were grown, are now producing ten. Fences that used to be from five to seven yards wide, are now reduced to the moderate width of two or three feet, and are neatly clipped or slashed. Useless hedge row timber has been cut down by some landlords at the suggestion of the tenants, to the benefit of both and the community at large. Turnips in some instances, are not so clean as we have seen in former years; the summer has not been a good one for cleaning them.

The competitors for the best crop of turnips were ten in number, all good. Mr. Kendal, to whom we have awarded the prize, has a most excellent crop, being heavy, well thinned and clean.

The competitors for the premium given by Edmund Hornby, Esq., for the best managed farm, were five in number, all in the most exact order. Mr. John Scott, to whom we have awarded the prize, is deserving of very great merit for the improvement he has made in so short a period.

For that most excellent premium given by the society, for the neatest cottage and garden, we were sorry to find there were only two claimants, viz., Richard Talbot, Clawthorpe, and Miles Wilson, Clawthorpe; to the former of which we have awarded the prize. The latter is deserving of great merit. We trust when it is more generally known amongst the labourers, that a premium is given for their encouragement, there will be a greater competition. We remain, gentlemen, your obedient, humble servants.

ROBERT JACKSON,
THOMAS HODGSON,
JOSEPH ADDISON,
} Inspectors.

System of husbandry on my farm, situate at Greenhead, which is called the Four course system, and containing 220 acres.

Oats, 28 acres; turnips, 30 acres; barley, 25 acres; wheat, 2 acres; potatoes, 1 acre; and the remainder in pasturage and meadow.

IMPROVEMENTS.

1845—Grubbing 96 roods of old fence by landlord, the tenants carting all the stones and rubbish, and filling the same; 50 roods of new wall by landlord, tenant carting the stones; draining 110 roods of sod at tenant's expense: 50 roods of stone drain, landlord paying for cutting and walling, tenant carting the stones and filling up.

1846—Draining 220 roods of stone drain, cutting and walling done by landlord, tenant carting the stones and filling up; 60 roods of wall by landlord, tenant carting the stones; 50 roods of new quick fence by tenant; 60 roods of sod drain by tenant.

1847—225 roods of sod drains done by tenant; 108 roods of stone drain, cutting done by landlord, filling up and carting stones by tenant; 40 roods of sod and stone dike done by tenant.

And several score roods of old fence sodded or diked up within the last three years by the tenant, that is not mentioned in the above statement.

JOHN SCOTT, Greenhead.

THE CROPS.

[FROM THE BANKER'S CIRCULAR.]

When proceeding to our annual Stock-taking in this most interesting affair of the supply of food, we must cast out altogether the important item of potatoes, because of the mysterious nature of the disease which is consuming them, ignorance of the range of its influence, and its duration; but we cast it out with this observation, viz. that our confidence in as large a store of food being collected from the potato crop of the British Islands in 1848 as in 1847 is yet unabated. This from the surface planted would allow of full two-thirds lost, one-third saved, that third yielding a supply equal to that from the small surface planted in 1847. We have seen good crops of sound potatoes dug out of parish allotments, and in another part of the same field, other plots from which not one-fourth of sound tubers would be saved. What this wet week may do in renewing, spreading, or aggravating the malady, no man can say. If, as many persons suppose, there should be no sound potatoes available for human food beyond Christmas-day, that indeed might alter the conclusions at which we have arrived concerning the probable prices of corn; but still it would not materially affect the case for the period within which we should deem it safe to say anything on the subject of price.

The nature of the season, the partial blight of the wheat crops of particular districts, and the varying character of the ears as to fullness and perfection, or scantiness and imperfection, have induced us to take extraordinary pains this year; and although there never was a wheat crop on which it was more difficult to make a report which would be altogether satisfactory to ourselves, the condensed summary of our information may be soon given. If you trace the Thames from its mouth to its source about four miles south-west of Cheltenham, and from that point trace another line to Ludlow, you may safely conclude that the wheat produced on the land lying to the south and west of that described line will prove defective in its acreable yield; and that not to an insignificant degree. It includes the bad wheat crops of Kent, Monmouthshire, and Herefordshire, to which we formerly adverted, and the defective wheat crops of all the other western counties. Perhaps we ought to except Berkshire from this general description, but we are describing the average of a whole large section of country. And it may be fairly estimated that this large section will produce less wheat than it did in 1847, by, at the least, ten bushels to the acre, and less than an average supply by six bushels to the acre. It is curious to remark, and at the same time it is illustrative of our position, that this is exactly that section of Great Britain where the potato disease commenced earliest, and has committed its greatest ravages. Bear in mind, too, that this section contains that part of England lying west of Wiltshire, where such large crops of wheat as are grown in the eastern counties are not familiar to the people. Tell a Devonshire farmer of the farmers of Lincolnshire growing six quarters of wheat to the acre, he will receive the information with incredulity; for it is, we believe, more than double the acreable yield of that county. Yet there are many such crops of wheat in the eastern counties this year, though perhaps not a tithe of the number found in the year 1847.

Then how much in the aggregate must we set down for the deficiency in this great section? It may be assumed that the wheat annually produced in it does not exceed one-fourth of the quantity annually produced in England and Wales. We believe, *first*, that Westmoreland, Cumberland, Northumberland, Durham, Yorkshire, Lincolnshire, and Nottinghamshire, produce as much wheat as the district under review; *second*, that Norfolk, Suffolk, Essex, Middlesex, Cambridgeshire, and Huntingdonshire, produce more. (The old statistics of the corn-trade said Essex produced more wheat than all Scotland; but this was before drainage improved its climate and fertility). Then for the *third*, we have, without North Wales, as many counties lying between the Thames and Westmoreland, having Oxfordshire and Lancashire at the extremities, and coming as far eastward as Rutland and Bedfordshire, as the great section itself contains; and this *third* includes the great wheat-producing counties of Bedford, Oxford, Worcester, Warwick, and Northampton. There cannot be a doubt that this third part produces annually as much wheat as the great southern and western section; so by this kind of rough analysis, and also considering that that section is not the part of England which produces the greatest crops of wheat, we arrive at the assumed fact that the southern and western district has about 1,500,000 acres applied to wheat culture. A deficiency of six bushels per acre on 1,500,000 acres, would show an aggregate loss, compared with an average supply, of 1,125,000 quarters in the wheat produced in the south and west district of England in the year 1848.

A general description of the remaining three sections need not occupy much more space than that of the one disposed of. The wheat crop of 1847 yielded the largest amount of produce that was ever gathered from the soil of England, except in the year 1844. This is one cause of the farmers feeling and expressing disappointment at the store they have just collected; their impressions—those of the farmers of the eastern counties at least—have been warped and spoiled by a succession of good crops of wheat, for the crops of 1845 and 1846 were much better than superficial observers imagined. While at the same time we must admit that the wheat crop of 1847 was a rather better crop than we ourselves

represented, though we described it as a good crop :— "It will yield somewhat considerably above an average supply on the whole." . . . "We have no doubt of the produce of wheat in 1847 being considerably above an average both in breadth and acreable yield." (See Circular of September 17, 1847.) This was pretty strong, but it was perhaps not quite strong enough for the occasion. That crop of wheat yielded at the least ten bushels to the acre more than the crop of 1848 will yield—taking the whole United Kingdom into account. We cannot describe the present crop for the north of Thames portion of England higher than three bushels to the acre short of an average supply, or ten bushels to the acre short of the wheat harvest of 1847. This would show a difference in the two crops of something about five millions of wheat in the north of Thames great section of the country; and an assumed deficiency compared with an average supply of 1,562,500 quarters. So on these views the account of the present wheat harvest will stand thus as compared with an average crop :—

	Qrs.
Deficiency in the section south and west of the Thames	1,125,000
Do. do. north of Thames. . . .	1,562,500
Showing the wheat crop of England to be under an average by	2,687,500

Let us state in round numbers the deficiency in the wheat crop of England and Wales, compared with an average crop, at three million quarters.

The explanation of the deficiency of the three sections being so little in excess of the assumed deficiency of the one section is to be found in the nature of the weather in each respectively. Nothing can show this difference more strikingly than the fact which we mentioned some time ago, viz., that at the commencement of harvest we found more barley cut and carried in Nottinghamshire and the wolds of Lincolnshire, than was cut and carried, relatively to the quantity produced in each locality, between London and Reading—usually reckoned the forwardest of all districts. Another explanation is, that some parts of the north of Thames section are reported to yield better crops of wheat, oats, and barley in 1848 than in 1847. One of the best informed men in Cumberland told us such was the case in that county, and two intelligent farmers living on the western side of the Lincoln Wold ridge said that the wheat crops in their neighbourhood were better this year than in 1847. We doubt whether the perfect accuracy of these representations will be confirmed when the whole of the crops have been subjected to the flail or thrashing machine—especially that part which relates to the Lincolnshire district. On the whole, however, there can be no reasonable doubt that the entire of the wheat-crops north of the Thames will, as a whole, bear out substantially the account we have here rendered of them.

Starting on the year of consumption, which we assume to begin on the 1st of September, with a deficiency of three million of quarters in the wheat crop of the present year, where can we find compensation for that serious defalcation? We answer at once, it may be readily found, and much more, in the stock of old wheat of home growth in the hands of the farmers. We believe that in some past recent years as large, perhaps a larger, quantity of old wheat was held at harvest time by the wheat-growers of the fens of Norfolk, Cambridge, and Lincolnshire, as well as by some of those living on the more elevated lands of the last county. But this does not affect the strength of our conviction, or the satisfactory conclusion that we have drawn, as the result of diligent inquiry and examination. The stock of old wheat is more thickly spread all over the whole country than we ever before knew it, not excepting, we believe, the stock held at the time of harvest in 1845. Small farmers, as well as large, now hold old wheat; it is to be found in all obscure by-places, as well as in more conspicuous and far-famed districts. Consequently, without refining on the estimated amount of the unconsumed wheat and flour in the possession of dealers, millers, bakers, &c., at harvest time, as we have sometimes done, we say decidedly that the stock of old wheat was fully equal to three months' consumption, and that if it could have been altogether brought forth, it was sufficient to serve for actual consumption, and also for the maintenance of the usual processes of wheat manufacture on a fair scale of operation.

We understand that a London banker, whose position renders good information on this subject necessary on account of its close bearing on the question of money, credit, prices, &c., estimates the stock of old wheat very much higher than we have done. We know not how he has arrived at his conclusion in the matter; and whatever may be the opinion of other men, we see no reason to alter our own conclusion. Now three months' consumption describes a quantity in wheat about equal

to . . . . . qrs.	5,000,000
Deduct the aforesaid deficiency in this year's growth	3,000,000
Above the actual wants of consumption .	2,000,000

This would be our condition; and certainly we believe not a worse if we could rely upon the old stocks of bacon and potatoes—such as were generally held in years preceding 1845. How much the deficiency in these important articles of human food may trench upon the customary consumption of wheat it would be vain to speculate on. We rest upon the satisfaction we feel in having convinced ourselves of there being a surplus of two million quarters beyond the strict wants of consumption for the year ending on the 1st of September, 1849.

Now let us look at Scotland. The editor of the *Glasgow Examiner* shows, by his method of going to work, a true sense of the importance of obtaining information from local authorities. He has arranged, in parallel columns, short reports concerning the harvest from persons, whose names and addresses he gives, living in most parts of Scotland. This is the summary of the information so collected :—

ANNUAL STATISTICS OF THE HARVEST AND CROPS.—Sept. 23.

"At considerable labour and expense, we have procured from unbiassed parties, resident in each county,

and now present to our readers, our annual statistical account of the state of the harvest—the probable return as to wheat, barley, and oats, whether under or above an average. Particular attention has been paid to the state of the potato crop, on the preservation of which the prices of grain, the state of the money market, the labour, the comfort, the stomachs of the working classes so much depend. That the statement is of importance to all classes of society no intelligent person will deny; and were the same system followed by the independent press in England and Ireland, grain merchants, instead of a blind speculation in grain, resulting too often in bankruptcy, could calculate to almost a certainty the amount of imports required for the season; while the Bank of England could at the same time estimate, taking matters at the worst, the amount of gold to be disgorged for foreign grain. Should such statistics be made up at command of Government, the money expended therein would be less complained of by the community than the hundreds of thousands expended yearly on profitless commissions by our Whig Government. Let it not be said that the report of a general deficiency in Great Britain would tend to produce a wild speculation at the beginning of the season, and thus raise the poor man's bread. That speculation on such a report would immediately ensue is certain; but such could only be salutary and beneficial as putting our corn factors on the alert to procure from abroad the supply required, and as all imports are chronicled, a complete state of surplus or deficit could at any time be obtained, so that corn would at all times command its value, as regulated by supply and demand. From the statistics furnished, we gather the following results:—Wheat and barley have been secured in good condition, the quality excellent, and the quantity rather under an average. The oat crop on which the Scottish farmers mainly depend, and which in Scotland is the "staff of life," is superior both in bulk and quality. Twenty-two report this crop a full average, and sixteen report it above an average—the quality excellent, and expected to meal well. The only crop exciting alarm is the potato crop; but this very alarm is, no doubt, creating the disease. In three counties no disease has yet appeared: in the greater number of counties the disease is trifling, possibly not more than was common previous to 1845, although then, when a bad potato was occasionally seen, it was denominated "disease," nor was the whole field condemned on that account. It must be admitted, however, that in gardens and in several counties the disease is equal to that of 1845-6, causing in some cases a total loss, and in others a loss of one-half and two-thirds of the crop. As the breadth planted, however, exceeds by one-half that of last year, should the autumn continue fine, there is no fear of an abundant supply of a wholesome article throughout the year at a moderate price."

We would only remark upon this, that the several particular reports of the oat crop do not seem to us quite fully to bear out his general statement, "The oat crop is superior, both in bulk and quality." Several of the returns come "below an average" or "under an average." We advert to the point, which, however, is not one of much importance, because we have an impression that this particular crop is overrated in England, Scotland, and Ireland.

The Barley crop is the only full average crop, and we believe it will be found to be such both in England and Scotland. There may be few of such fine samples as last year represented the bulk of what was then produced, but we have no doubt of the measure.

Concerning the grain crops of Ireland, we can say nothing further than that some of our friends, residing in that country, on whose capacity for investigation and careful judgment we place great reliance, say that all the crops will prove considerably below an average. Very little barley is produced in that country, and this may turn out nearly an average supply to the acre. The wheat crop is decidedly inferior; we should conclude, from all we have heard concerning it, that the south of Thames section of England has produced a relatively better crop. We must treat the report of the "Economist" of this year's oat crop in Ireland yielding six million quarters more than the oat crop of 1847 as a preposterous extravagance. We should be glad to feel an assurance that it would exceed its immediate predecessor by much more than one-third part of that quantity. This will be, for the present year, the staple product of Ireland; and it is satisfactory to learn that it may furnish nearly an average acreable supply, but without any large old stocks of berry or meal in store.

It is obviously a very difficult question to determine with any satisfaction what is likely to be the future price of corn for any given period of time. The new elements that have been introduced into the trade by the change in the law altogether elude manipulation. It is not so difficult to perceive what must be the ultimate general effect on prices from the operation of the new system; prices on the long run will be at the least as low in England as in the continental ports, and we think lower on the average; because England will be resorted to as the central emporium for the corn dealers of Europe and America, of the Mediterranean, Black Sea, as well as of India and Australia. But to determine the more immediate effect of the change requires that one should know what is the remaining power of merchants for enterprises of this nature, what is their disposition for transactions in the corn-trade at this instant of time, and how they have provided for support for such transactions from the Bankers and bill brokers who supported them in the year 1847. It is perfectly manifest that they are now in a very different state, with regard both to disposition and power, from that which propelled them onward after Christmas, 1846. There is no speculative temper throughout the British corn trade, so far as we can discern from an examination into that part of the question.

The next point to be considered is, if British merchants have less disposition to seek into foreign sources of supply for corn, will foreign dealers or merchants have impulse sufficient to induce them to supply the deficiency in British enterprise? We answer this question decidedly in the affirmative. Such is the want of money

on the continents of Europe and America, that the shores of England will be invaded with supplies of all things which will draw forth money: they will be brought here at prices very little above what those things would command at home. This point is now in course of being determined as to corn by the exports of wheat from the western shores of France. Joseph and Charles Sturge, in their Circular letter of the 4th inst., confirm this statement. They say:

"The abundant weekly arrivals of wheat into London and other eastern ports have prevented the advance which would have probably taken place; and had we not experienced a good demand for Ireland, the magnitude of the supplies must, we think, have caused a decided decline in price; should they continue on the same scale we do not anticipate much improvement, unless France should require an import of wheat; but so far is this from being the case at present, that we are receiving a considerable quantity from the western ports of that country, *and these shipments are increasing weekly*. The advance that occurred in our markets five or six weeks ago produced its usual effect in the shipping ports abroad—that of a still greater rise: it has also been accompanied by a great enhancement in freights from Alexandria, the Black Sea, Constantinople, &c., being more than double what they were a few months back; and there are now very few places where wheat can be bought at a price that will not leave a material loss if imported into this country and disposed of at our current rates; though at present it appears Great Britain is the only market of any consequence that affords a prospect to the producing nations for the consumption of their surplus grain."

Bearing in mind that England is the only large market where foreigners can count upon commanding sales at all times, let us make an attempt to arrive at an approximating estimate of the force with which British demand will act on foreigners. Some years ago there was a Joint-Stock Company formed for purchasing corn and cattle in the provinces of Holland lying between Flushing, Venloo, and Dusseldorf, conveying them to Dunkirk, and the cattle thence to Paris. It was a prosperous undertaking so long as Paris was filled with gentry and visitors, whose families are the great consumers of butchers' meat. Under those circumstances, England had no chance of competing with Paris for the custom of that Company. The revolution has entirely altered that state of things; Paris has no such power to draw and pay for cattle and other agricultural produce from Dunkirk, and the nature of the falling off in that demand may be seen by the fact that supplies of cattle are now coming into London from Nieuport, a Belgian port close to Dunkirk. We take the following significant paragraph, so illustrative of the change we speak of, from the "Times":—

"French Cattle.—We have before had occasion to notice the arrival of cattle for several successive weeks past, by the steamers trading between the metropolis and Havre, as being of more than usual interest, in consequence of the supply of live cattle from France not having been of so common occurrence as from other of the continental states of Europe. We perceive that a vessel has now arrived at the Brunswick Wharf, Blackwall, with an entire cargo of cattle from Nieuport, comprising 144 oxen and cows, of French produce. The name of the vessel bringing the cargo alluded to is the Emerald, which we believe to be one of the steam packets which was previously a passenger-boat between London and Boulogne. We need scarcely remark, no importations of horned cattle to this extent from France has on any former occasion taken place, and the arrival is of very considerable interest."

These may be Belgian or Dutch cattle, and not French, as the *Times* supposes. The fact is important, seeing that Nieuport is so near to Dunkirk, formerly the inlet of supplies for Paris.

Now let us see if any light can be thrown upon this point from another quarter. We have been informed by travellers recently arrived from Spain that the harvest of that country is an abundant one. English money is nearly as much wanted there as in France, for there never was greater difficulty in getting hold of the coin of the realm than at this moment; partly arising from political troubles and prospective alarms, which create universal distrust, and partly from the depreciation to which the government allowed the notes of the Bank of San Fernando to fall. Hoarding of coin has become a passion, and markets are stagnant for the want of a satisfactory currency. Notwithstanding the low state of locomotion in that country, and the expense of transport for heavy bulky commodities, we are of opinion that corn will find its way to the coast, and be shipped to England in unusually large quantities, considering the limited nature of a Spanish supply compared with what Russia or the United States, the Baltic or the Black Sea, could give us. And a supply of corn from Spain cannot be obstructed by frosts or floods, nor much impeded by contrary winds, as it was in the winter and spring of 1847 in the case of all the other countries. Whatever amount of wheat Spain can accumulate and bring to her shores may be sent to England during the ensuing winter and spring months. What that amount may be no man can estimate with any accuracy, but that it is likely to be much larger than usual may, we think, be inferred from the following description of its burdensome bulk and low price, which we extracted from the *Morning Chronicle* a month ago.

"The Guia del Commercio states that the price of wheat at Caceres, Estremadura, at this moment is only 22 reals per fanega, which is about 23 shillings per quarter; yet with all this low state of prices and great abundance, it is doubted whether any very considerable quantity could be sent to England, owing, first of all, to the enormous expense of transport to the coast, from the defect, or rather absence, of means of communication, and also partly to the great rise of prices occasioned by a demand to any extent. The letter quoted in the Guia complains of the abundance, and blames the farmers for sowing so much, and thereby incumbering themselves with a crop which is of no adequate value, as they have no means of getting rid of it to advantage; and this is pretty much the case with other corn districts in Leon, Salamanca, &c., though the navigation of the Douro affords some facilities to the latter. At Santander, which is the port to which wheat is usually sent from Castile, the average price during last month was 42 reals per fanega, or about 44s. per quarter."

The bad harvest of 1848 in Russia, an augmented army, requiring to be fed from home and out of the public stores, together with the apprehensions in the mind of the Emperor thence arising, may prevent large

supplies of corn coming from that quarter to the shores of England, at least for six months to come. At all events it is manifest that the more exhausted reservoirs and *depôts* will afford no such abundance as they poured forth in the winter and spring of 1847. This, however, is not the case with the United States; all persons speak of abundance from the crop of 1848 in that country, and many persons represent the store of old wheat and maize in the western sections of the Republic to be large. We have been astonished to see the scanty supplies sent down to the sea-board from these abundant interior stores; but the American farmers were last year taken by surprise, and gave, in the early stages of the speculation, more of their profits to the dealers than they like to lose. This rendered them more wary and cautious this season; so when the accounts of our bad harvest and the destruction of the potato crop in Ireland reached the United States, they at once jumped to the conclusion that they should be favoured with another period of high prices and enormous gains. To this we attribute the fact of the American farmers holding back their grain in an extraordinary manner. Farmers of the Saxon breed are, in their peculiar way, more determined and reckless speculators for high prices than any other class of men. This is true, both of the farmers of England and the United States. When the latter found that the necessities of England and Ireland would probably fall much below their previous expectations, which they would discover some time in the month of September, their reversed action would proceed from a more vehement impulse than their preceding determination to hold stock.

From these views we expect to witness large supplies of grain brought to the shipping ports of the United States between September and Christmas. It is not to be expected that they will be of such magnitude as those which distinguished the period of feverish speculation, high prices, and high freights, for nothing but an extraordinary price could bring corn forth from remote places in the interior of the country; still there will be a quantity sufficient, with supplies from many other quarters, to keep England and Ireland well served at moderate prices. They may not arrive soon enough to exercise so powerful a bearing on prices as they will ultimately have; but still we agree with Messrs. Sturge, that foreign supplies will be quite ample enough to prevent any permanent rise of prices; and we also think they will be sufficient to cause some decline. Let us for a moment look how these foreign supplies work to affect prices more, perhaps, than an equal amount grown at home would affect them.

Adverting once more to Lord Stanley's theory—no remarkably novel one—of dense populations promoting the welfare and prosperity of farmers, they would so act in a very powerful manner under a restrictive or regulated corn trade. But the centres of these dense populations determine the prices of corn for the whole kingdom. It is the quantity which the farmers of Norfolk and Lincolnshire send away that rules the price of their own markets. There would be scarcely any means of ascertaining an average price but for the surplus which is sent to a distance; for much of that sold at home is disposed of by barter or by private sale, and never comes to a market at all. Now, those great centres which command the price of corn for the whole kingdom are, under the free-trade system, virtually, at all times, in the hands of foreigners; and we have seen that they are more accessible to those foreigners in cost of freight than to the great corn districts of England. Can any man doubt that there will be an approximation to an equality of price in the ports of Vigo and Corunna, Bourdeaux and Nantes, Dunkirk and Rotterdam, Hamburgh and Stettin, and the British ports of Maldon, Yarmouth, Lynn, and Wisbeach? If this be admitted, then the price must rise prodigiously at some of those continental ports, or it must fall in England.

We now come to our conclusion; and we regret that we should be compelled to differ so much from the views taken by the corn trade of London on this vital point. They think of nothing but higher prices; they may prove right, speaking of the course of the trade for a few months.

No man can say how fast foreign supplies may come in, still less is he able to guess at the amount of defalcation caused by the potato disease to be filled up by grain. These, and the new elements thrown into the case by an altered Corn-law, and by the consequences produced by revolutionary ebullition, render the question one of unusual difficulty. We, however, venture to express our opinion that, considering the large arrivals of foreign corn, prices will range between the following limits:—

1. That if you take as a central point 48s. the qr. for wheat of an average fair quality, the average price of wheat for some months may be expected to be found within 3s. of that central point. This is taking a range of 3s. the qr. on either side, and an extreme range of 6s. the qr. from 45s. to 51s., the highest being somewhat below the present quotations for wheat of average quality.

2. That if you take a similar central point for barley at 31s. the quarter, the average price of barley of fair but not brilliant malting quality, will be found within 3s. of that central point after the markets have settled down to their natural state. This, we believe, is also rather below the present quotation for fair malting barley.

THE SILVER TANKARD, the liberal gift of Francis Woodward, Esq., of Little Comberton, for the best cultivated farm within twenty miles of Evesham, was awarded, at the last meeting of the Evesham Agricultural Society, to Mr. Thomas Oldaker, of Grimley. The tankard was selected from the stock of Mr. William Manning, of the Cross. On it are represented, in prominent *basso relievo*, agricultural implements, horses, and other appropriate adjuncts of the farm. The whole presents an elegant appearance; it has attracted much admiration, and reflects additional credit on the taste of Mr. Manning, and the resources of his establishment.—*Worcester Chronicle.*

SALES OF STOCK.

EARL DUCIE'S ANNUAL SALE AT TORTWORTH COURT.

Lord Ducie is so celebrated throughout the entire kingdom as a breeder of some of the best stock in England, that of course his annual sale is looked to by agriculturists with considerable interest. The sale for the present year was held at his lordship's seat, Tortworth Court, Gloucestershire, on Tuesday, Oct. 3, and was attended by the leading farmers of Gloucestershire, Somersetshire, and Devonshire, in addition to many from Norfolk and the more distant counties. Having arrived rather earlier than the hour fixed for the sale, I was induced, accompanied by some agricultural gentlemen of high standing in their profession, and with whom I was acquainted, to walk through the grounds, and take a survey of the farm, which, in every part, according to their judgment, reflected high credit upon the management of the noble lord, and upon which were herds of dairy cows, heifers, steers, and bull calves, all of the short-horned breed, and of excellent character; many of which were, however, characterized by the judges as being so superior in breed as to be extraordinary and unequalled by anything in that or the neighbouring counties. I may, for myself, now observe, that Tortworth Court is one of the ancient baronial residences of this kingdom, and has been in the possession of the family of the present earl for nearly three centuries. It is celebrated in history and in Evelyn's "Sylva," for a famous Spanish chesnut tree of immense magnitude, supposed to be now nearly if not quite a thousand year old, and which was noticed as being one of the most extraordinary trees in the kingdom, so long back as the reign of King Stephen; it was also mentioned in the reign of John; and it was so well known to his Majesty Charles II., that upon his restoration he is said to have asked among his earliest questions, "And how fares the old Spanish chesnut-tree at Tortworth Court?" The fine old tree still measures fifty-seven feet in circumference at the base of the trunk; and its branches, which are still green and bearing fruit (some of which I plucked), cover more than a quarter of an acre of ground. But, alas! it presents but another specimen of the ravages of time; the venerable trunk is fast falling into decay, and that which was the monarch of the forest is become the abode and hiding-place of the fox.

For the company who were assembled the noble earl provided a substantial luncheon in the farm, consisting of rounds of beef, with venison pasties, and other good old English fare, to which, at different portions of the day, upwards of 650 persons partook.

The sale, which was conducted by Mr. G. Humphrys, consisted of 13 pure bred Durham bull calves, 4 prime fat short-horn cows, 22 fat and meaty West Highland steers, 85 Down and cross-bred wether and Chilver lambs, 69 pure bred Leicester ewes and theaves, and cross-bred theaves, 8 superior breeding and fat pigs, and 30 tods of wool.

In commencing the sale Mr. Humphrys stated that, as on former years, there would be no reserve upon any but one or two lots, for which Lord Ducie would no doubt himself give the reasons.

Earl Ducie then said that there would be no reserve on any lot, but the fact was that two or three of the bull calves had been amiss. He was satisfied that they were getting better; but he wished to state that any person purchasing them should not be at any risk, as they should remain under his own care, and no money should pass from the purchaser until they were perfectly right.

The sale then commenced, and the wool, which was described as about half teg, sold at 18s. per tod.

The litter of sucking pigs were next sold, and realized prices varying from 14s. to 40s. each. The two fat pigs sold respectively for £5 15s. and £7 10s. The sheep were then sold. Lot 10, eight down wether lambs fetched 23s. per head; lot 11, eight do., 22s. do.; lot 12, eight do., 23s. 6d. do.; lot 13, eight do., 24s. 6d. do.; lot 14, eight cross-bred lambs, 26s. do.; lot 15, eight do., 26s. 6d. do.; lot 16, ten do., 26s. do.; lot 17, ten do., Chilver, do., 25s. do.; lot 18, nine do., 22s. 6d. do.; lot 19, seven do., 21s. 6d. do.; lot 20, six true bred Leicester theaves, 30s. do.; lot 21, four do., and two cross-bred do., 30s. do.; lot 22, eight full-mouth true-bred Leicester ewes, 45s. do.; lot 23, eight do., 33s. 6d. do.; lot 24, and up to lot 28, which were of the same description, sold at prices varying from 33s. to 34s. per head.

The sale of bull calves then commenced, and possessed much interest. The first lot offered was The Felon, a fine white bull calf, calved Sept. 21, 1847, by Cramer, 6,907 (the figures refer to the figures in the "Herd-book"); dam Fairy, by Cato, 6,836. After some competition, this lot was knocked down to Sir Charles Cockerill at 27 guineas.

2. Clarendon, roan, calved Jan. 22, 1848, by Delcroix, 9,017; dam, Clarance, by Henwood, 2,114. Mr. Niblett purchased this lot for 40 guineas.

3. Constable, roan, twin-brother of lot 2, was purchased by Mr. Smith, of Sherborne, at 44 guineas.

4. Sky-blue, a roan, calved February 28, 1848, by the Duke of Cornwall, 5,947; dam Cream, by Orontes, 4,623; bought by Mr. Strafford, editor of the "Herd Book."

5. Fiddler, a roan, calved March 13, 1848, by Cramer, 6,907; dam Florentia, by Zenith, 5,702; bought by the same purchaser at 25 guineas.

6. Cavaignac, a road, calved March 29, 1848, by Duke of Cornwall, 5,947; dam Cinderella, by Helicon, 2,107, was bought by — Roe, Esq. of Lamerton, Tavistock, Devon, for 35 guineas.

7. Laceman, a roan, calved April 5, 1848, by Cramer, 6,907; dam Lace by William, 2,848, was sold to Mr. Thayer, of Shirlington, for 33 guineas.

8. Habeas Corpus, red and white, calved March 23, 1848, by Whittaker's Comet, 8,771; dam Fair Helen, by Petrarch, 7,329, was purchased by Mr. Strafford at 24 guineas.

9. Havanah, red and white, calved May 4, 1848, by Cramer, 6,907; dam Cathleen by Duke of Cornwall, 5,947; grandam Clio by Velocipede, 5,552. This calf occasioned considerable competition, and was finally knocked down to — Kilminster, of Beveston, for 50 guineas.

10. Raleigh, red and white, calved May 22, 1848, by Star of the West; dam Climax, by Duke of Cornwall, 5,947. Sold to Mr. Strafford for 20 guineas.

11. Frolic, red, calved April 24, 1848, by Cramer, 6,907; dam Comedy, by Duke of Cornwall, 5,947, was bought by Edward Holland, Esq., of Dumbleton, for 31 guineas.

12. Cardigan, red and white, calved April 30, 1848, by Star

of the West; dam Challenge by Morpeth, 7,254. This lot occasioned a good deal of competition, and was knocked down to Mr. Gamble, of Norfolk, for 34 guineas

13. Hesperus, red and white, calved June 6, 1848, by Star of the West; dam Clio by Velocipede, 5,552. This calf, although only four months old, was a magnificent animal, and although started at 20 guineas, continued running up in biddings until it was finally knocked down to Mr. Slatter, of Cirencester, for 70 guineas.

The fat cattle and Highland steers were then sold. The fat cows brought prices ranging from £26 to £34; and the steers made from £8 15s. to £12 5s. each.

The sale then terminated. The day throughout was magnificent.

SHORT HORNS.

SALE OF PURE-BRED SHORT-HORNED CATTLE, BELONGING TO BANKS STANHOPE, Esq., WHICH WAS SOLD BY AUCTION, BY MR. WETHERELL, AT REVESBY ABBEY, ON THE 21ST. OCTOBER.

Lady Thorn, roan, bred by Mr. Booth, of Killerby; calved April 8, 1841; by Lord Stanley, 4269; d. Teetotum by Young Matchem, 2282; gr. d. Toy, dam of Bracelet and Necklace by Argus, 759. 41 guineas; original cost price, £150.

Lady Thorn, in 1842, at the Yorkshire Society's Meeting, held at York, with three others, won the sweepstakes for the best four animals exhibited, beating between twenty and thirty others; in 1843, at Richmond, the second premium as a two year old, being beat by Birthday, her half sister; in 1844, first prize at Horncastle as a three year old; also first prize at Lincoln as a three year old; in 1845, at the Meeting of the Royal Agricultural Society of England, held at Shrewsbury, the first prize as the best cow.

Lady Jane, roan, calved in 1840; by Plenipo, 4724; d. Lady Sarah by Childers, 1824; gr. d. Miss Leighton by Umpire, 2783. 11 guineas.

Louisa, roan, calved in 1840; by Plenipo, 4724; d. Lady Ann by Childers, 1824; gr. d. Miss Leighton by Umpire, 2783. 15 guineas.

Pretty Maid, roan, calved in July, 1841; by True Blue, 5522; d. Princess by Alamode, 725; gr. d. Peeress by Childers, 1824. 12 guineas.

Pretty Maid, in 1842, at Louth, gained first prize as the best heifer calf; at Lincoln, when 12 months old, first prize as a yearling; in 1843, at Caistor, second prize as a two year old; in 1844, at Horncastle, received three guineas as extra stock; in 1845, at Sleaford, first prize as best cow; in 1846, at Rasen, first prize as best cow.

Miss Renton, white, calved in 1841; by True Blue, 5522; d. Symmetry by Speculation, 5290; gr. d. by Childers, 1824. 21 guineas.

Miss Renton, in 1842, at Lincoln, gained first prize as the best heifer calf; in 1843, at Caistor, first prize as a yearling; at Sleaford, first prize as a yearling; in 1844, at Horncastle, first prize as a two year old.

Adelaide, roan, calved March, 1842; by True Blue, 5522; d. Albina by Miracle, 2321; gr. d. Alice by Sir Henry, 1446. 30 guineas.

Adelaide, in 1844, at Horncastle, gained second prize as a two year old; in 1845, at Sleaford, a prize in extra stock.

White Rose, white, calved August, 1842; by True Blue, 5522; d. Rarity by Alamode, 725; gr. d. by Childers, 1824. 22 guineas.

Mildred, roan, calved in November, 1842; by True Blue, 5522; d. Matilda by Duke (by Miracle, 2321); gr. d. by Alamode, 725. 26 guineas.

Ladybird, roan, calved February 28, 1844; by Diamond, 5918; d. Ladythorn (lot 1) by Lord Stanley, 4260; gr. d. Teetotum, by Young Matchem, 2282. 67 guineas.

Ladybird, in 1846, at Market Rasen, won the first prize of £4 for the best two year old heifer; in 1847, at the North Lincoln Society's Show, held at Spilsby, won the first prize of £5 as the best three year old.

Gezina, bred by Mr. Whitaker, white, calved Feb. 12, 1842; by Rockingham, 2550; d. Graceville by Hubback, 2142; gr. d. Gearmanville by a son of Young Warlaby, 2812. 25 guineas.

Waterloo 5th, bred by Mr. Bates, roan, calved April 7th, 1841; by Duke of Northumberland, 1940; d. by Norfolk, 2377; gr. d. by Waterloo, 2816; gr. gr. d. by Waterloo, 2816. 21 guineas.

Adeliza, red and white, calved November 25, 1844; by Cramer, 6907; d. Adelaide by True Blue, 5522; gr. d. Albina by Miracle, 2321. 25 guineas.

Beauty, roan, calved January 21, 1845; by Cramer, 6907; d. Pretty Maid (lot 4); by True Blue, 5522; gr. d. Princess by Alamode, 725. 24 guineas.

Nelly, red and white, calved February 6, 1845; by Cramer, 6907; d. Nonsuch by a son of Emperor, 1014; gr. d. Duchess by Cecil. 23 guineas.

Moss Rose, white, calved February 8, 1845; by Cramer, 6907; d. White Rose (lot 7); by True Blue, 5522; gr. d. Rarity by Alamode, 725. 19 guineas.

Surprise, roan, calved February 14, 1845, by Cramer, 6907; d. Louisa (lot 3) by Plenipo, 4724; gr. d. Lady Ann by Childers, 1824. 26 guineas.

Revesbythorn, roan, calved February 20, 1845; by Cramer, 6907; dam Ladythorn (lot 1) by Lord Stanley, 4269; gr. d. Teetotum by Young Match'em, 2282. 70 guineas.

Revesbythorn won the prize, as the best yearling heifer, at the Meeting of the Royal Agricultural Show, held at Newcastle, in 1846; thirteen competitors. Also the prize as the best two-year-old heifer, at Spilsby, in 1847. Cramer (Revesbythorne's dam), at Doncaster, in 1843, won the first premium as a bull calf, beating thirteen others; at Horncastle, at the North Lincoln Society's Meeting, 1844, when one year and eight months old, won the first premium as the best bull of any age, beating Mr. Booth's (of Killerby) Leonard, four years old, and five others; at Richmond, in 1844, at the Meeting of the Yorkshire Agricultural Society, the second prize as a yearling; in the same year the first prize at Lincoln, as the best bull of any age; and at the Meeting of the Royal Agricultural Society of England, held at Shrewsbury, in 1845, he won the first prize as the best bull of any age; and at the same meeting Lady Thorn (lot 1) won the first prize as the best cow of any age.

Margaret, roan, calved March 12, 1845; by Cramer, 6907; d. Mildred (lot 8) by True Blue, 5522; gr. d. Matilda by Duke (by Miracle, 2321). 25 guineas.

Caroline, white, calved July 21, 1845, (twin); by Cramer 6907; d. Fair Maid by a son of Emperor, 1014; gr. d. Countess by Young Favourite, 255. 15 guineas.

Cecilia, white, calved July 21, 1845 (twin); by Cramer, 6907; d. Fair Maid by a son of Emperor, 1014; gr. d. Countess by Young Favourite, 255. 17 guineas.

Ada, red and white, calved April 1, 1846; by Cramer, 6907; d. Adelaide (lot 6) by True Blue, 5522; gr. d. Albina by Miracle, 2321. 35 guineas.

Ada won the second prize as a yearling, at Spilsby, in 1847.

Blush Rose, roan, calved March 13, 1846; by Cramer, 6907; d. White Rose (lot 7) by True Blue, 5522; gr. d. Rarity by Alamode, 725. 75 guineas.

Blush Rose won the prize as best yearling heifer, at Spilsby, in 1847.

Revesby Bird, white, calved November 16, 1846; by Cramer, 6907; d. Ladybird (lot 9) by Diamond, 5918; gr. d. Ladythorn (lot 1) by Lord Stanley, 4269. 61 guineas.

Grace, white, calved December 4, 1846; by Cramer, 6907; d. Gezina (lot 10) by Rockingham, 2550; gr. d. Graceville by Hubback, 2142. 42 guineas.

Thetis, red and white, calved March 18, 1846; by Sailor, 7459; d. by Lord Adolphus Fairfax, 4249; gr. d. by Tory, 5507. 21 guineas.

Frolic, red and white, calved March 18, 1846, by Sailor, 7459; d. Fuschia by Lord Adolphus Fairfax, 4249; gr. d. Flirt by Tory, 5507. 17 guineas.

Cassandra, red and white, calved April 9, 1846; by Sailor, 7549; d. Crocus by Mariner, 7204; gr. d. by Mariner, 7205. 14 guineas.

HEIFER CALVES.

Jessy, roan, calved March 12, 1847; by Cramer, 6937; d. Lady Jane (lot 2) by Plenipo, 4724; gr. d. Lady Ann by Childers, 1824. 30 guineas.

Susan, roan, calved November 5, 1847, by Romulus, 8506, son of Cramer, 6907; d. Surprise (lot 16) by Cramer, 6907; gr. d. Louisa (lot 3) by Plenipo, 4724. 23 guineas.

BULLS AND BULL CALVES.

Fame, roan, calved August 22, 1846; by Mr. Booth's Buckingham, 3339 (son of Bracelet); d. Flora by Plenipo, 2435; gr. d. Sweetbriar by Columella, 904. 35 guineas.

Lincoln, roan, calved April 12, 1848; by Romulus, 8506, son of Cramer, 6907; d. Louisa (lot 3) by Plenipo, 4724; gr. d. Lady Ann by Childers, 1824. 14 guineas.

Hero, roan, calved April 1, 1847; by Cramer, 6907; d. White Rose (lot 7) by True Blue, 3522; gr. d. Rarity by Alamode, 725. 12 guineas.

Roman, white, calved March 20, 1848; by Romulus, 8506, son of Cramer, 6907; d. White Rose by True Blue, 5522; gr. d. Raity by Alamode, 725. 17 guineas.

Wellington, white, calved June 18, 1846; by Bramer, 6907; d. Waterloo 5th (lot 11) by Duke of Northumberland, 1940; gr. d. by Norfolk, 2377. 18 guineas.

Admiral, roan, calved October 15, 1847; by Romulus, 8506 (son of Cramer, 6907); d. Adeliza (lot 12), by Cramer (6907); gr. d. Adelaide (lot 6) by True Blue, 5522. 16 guineas.

Majestic, white, calved October 21, 1847; by Romulus, 8506 (son of Cramer, 6907); d. Margaret (lot 18) by Cramer, 6907; gr. d. Mildred (lot 8) by True Blue, 5522. 10 guineas.

Wallace, roan, calved May 7th, 1848; by Romulus, 8506 (son of Cramer, 6907); d. Waterloo 5th (lot 11) by Duke of Northumberland, 1940; gr. d. by Norfolk, 2377. 27 guineas.

Cato, calved June 4th, 1848; by Euclid, 9097; d. Caroline (lot 19) by Cramer, 6907; gr. d. Fair Maid by a son of Emperor, 1014. 5 guineas.

Major, roan, calved June 29th, 1848; by Romulus, 8506, son of Cramer, 6907; d. Mildred (lot 8); gr. d. Matilda by Duke (by Miracle, 2321). 8 guineas.

SALE OF BULLS, BRED BY SIR CHARLES KNIGHTLEY, BART., FAWSLEY PARK, DAVENTRY, BY MR. H. STRAFFORD, ON THE 29TH SEPT.—The sale of this distinguished breeder of short horns attracted a most brilliant and numerous company of eminent breeders from various parts of the kingdom, and realized such prices as are at once evidence of their superior merit, both as regards the purity of their blood and symmetry. Amongst the company we observed Earl Ducie, Sir Geo. Robinson, Sir Thos. Cartwright, Col. Cartwright, Capt. Dilke, B. B. Colvin, R. Field, J. Yorke, J. Beasley, J. S. Potterton, W. Smith, W. Bartholomew, S. Bennett, W. Hewett, N. Barthropp, N. G. Barthropp, G. W. R. Malins, J. Abbey, J. Gamble, — Aldridge, Esqs.; Messrs. Elliott, Cattle, Dreury, W. D. Manning, G. Faulkner, R. Lovell, Anderson, J. P. Giles, Bagshaw, Brown, Pittam, B. King, J. Clark, J. Ladds, Serevins, Cardwell, Lythall, and numerous others whose names we did not learn. Precisely at 2 o'clock, Mr. Strafford opened the sale with reading the usual conditions; and after a few pert remarks as to the high celebrity of the herd, as well as to the *bona fide* character of the sale, which, to all who knew the Hon. Baronet, could not for a moment doubt could be otherwise, said he should leave the merits of the animals to speak for themselves, being satisfied that the company they had drawn together (particularly under such an inauspicious day) was a sufficient evidence of the high estimation in which this herd of short horns was held, and under those circumstances, begged only a few moments to call attention to their purity of breeding, being descended from the unrivalled stock of the Messrs. C. and R. Collings; for, in fact, every breeder from whose herds the original animals were purchased, bred purely from those gentlemen, and were so continued to the present day. The sale consisted of 12 bulls and bull calves, which realized £769 13s., an average between £64 and £65 each; the highest priced was "Nundi," 13 months old, sold to Earl Ducie for 140 guineas; "Matadore," a white bull calf, 6 months old, to Earl Spencer for 115 guineas; "Admiral Cobden," to the Duke of Rutland for 80 guineas. The other purchasers were the Earl of Burlington, Col. Cartwright, Capt. Dilke, Mr. Bartholomew, Mr. Malins, Mr. Yorke, Mr. S. Bennett, Mr. Doig, and Mr. Daniels. The following prices were realised for some of the colts. Lot 1 was bought by Lord Burlington for 41 guineas; lot 2, Mr. Malins, 35 guineas; lot 3, Duke of Rutland, 80 guineas; lot 4 Mr. Bartholomew, 64 guineas; lot 5, Lord Ducie, 140 guineas; lot 6, Captain Dilke, 38 guineas; lot 7, Mr. Daniel, 22 guineas; lot 8, Mr. York, 70 guineas; lot 9, Lord Spencer, 115 guineas; lot 10, Colonel Pennant, 36 guineas; lot 11, Mr. Doig, 50 guineas; lot 12, Mr. Bennett, 42 guineas.

SALE OF SIXTEEN SELECT SHORT-HORN COWS AND HEIFERS, BRED BY MR GEORGE FAULKNER, ROTHERSTHORPE, NEAR NORTHAMPTON, BY MR. H. STRAFFORD, at the Weedon Station, which took place after the sale of Sir Charles Knightley's bulls at Fawsley, on the 29th Sept. The day continued very unpropitious; so much so, that several of Mr. Faulkner's friends wished him to put off the sale; but the same having been announced, he determined to leave it in the hands of the public. The consequence was, a large portion of the company at Fawsley travelled to the sale at Weedon; the result of which was highly satisfactory to Mr. Faulkner, the 16 lots realizing £691 19s., an average of upwards of £43 per head; a fact highly creditable to the exertions of Mr. F. as a tenant farmer, hitherto but little known as a breeder of short horns, and gratifying to think that the animals so sold were, as announced by Mr. Strafford, a fair sample of his herd, taken from grass, and in a perfectly natural state of condition, not having tasted artificial food. Mr. Field was the purchaser of "Delight," at 59 guineas, "Dart," at 56 guineas, "Daffodil," at 49 guineas, "Sweet Brier," at 40 guineas; Mr. Shaw, of "Ruby," at 47 guineas, "Daylight," at 41 guineas; Mr. Caldecott, of "Fanny," at 45 guineas; Sir Geo. Robinson, of "Fawn," at 43 guineas, "Beaver," at 40 guineas; Mr. Yorke, of "Locket," at 42 guineas; "Dorothy," at 38 guineas. The

other purchasers were Mr. Clark, Mr. Ivens, and Mr. King. The two sales were completed within three hours, including the whole of the preliminaries, and the journey between the two places.

SALE OF SHORT-HORN STOCK, RAMS, &c.—During Worcester fair, Mr. H. Strafford, editor of the "Short-horn Herd Book," offered for sale nine bull calves and nine cows and heifers, of improved pure-bred short-horned cattle, from the herd of Mr. Edward Lakin, of Hanley Castle. The sale attracted much attention, and as it was declared there would be no reserve, it went off spiritedly, every lot being sold. The nine calves, varying in age from five to seven months, averaged a little more than £18 each, two of them fetching £25 each, and one, from a cow of Earl Spencer's, calved February 10th, realized 42 guineas, Mr. Guest being the purchaser.

GREAT SALE OF SHORT HORNS AT SHERBORNE PARK, ON FRIDAY, OCT. 6.—A large company was assembled at this sale, embracing many noblemen, agriculturists of distinction, and a large attendance of the neighbouring farmers. Among those present were the Hon. Earl Ducie, Lord de Manley, Lord Redesdale, Lord Moreton, Sir John Cathcart, Bart., Sir Thos. Cartwright, Hon. Gen. Ligon, Major-Gen. Wemyss, Col. Kingscote, B. B. Colvin, Esq., High Sheriff of Essex, Capt. Evans, Capt. Dilke, Capt. Polhill, Rev. Charles Barter, Rev. Thomas Lewis, Edward Holland, Esq., Edward Bowley, Esq., S. Wells, Esq., R.N., G. Wilson, Esq., Principal of the Cirencester Agricultural College, Henry Strafford, Esq., William Lawrence, Esq., Ambrose Stevens, Esq., of New York, John Homfrey, Esq., Messrs. Kendall, Trethewy, and Davis, of Grampound, Cornwall, G. Morton, of Whitefield, the Agents of the Earl of Radnor and the Earl of Ilchester. In being broken up, this fine herd is distributed into various quarters, and into distinguished hands, from royalty itself to the plain tenant farmer, from England to Australia. The purchasers were Prince Albert; Earl of Ilchester; Earl Radnor; Earl of Suffolk; Hon. Lady Cockerell; Sir Thomas Cartwright; Agricultural College, Cirencester; Col. Kingscote; Rev. C. James; B. B. Colvin, Esq., Monkhams; R. Field, Pyrgo Park; Mr. Smith, Broadmore; Mr. Rilminster; Mr. Garre; Mr. W. Hewer; Mr. Hall; Messrs. Kendall, Trethewy, and Davis, Cornwall; Mr. Bowly. The following were the prices obtained:—Rowena, red and white, calved in 1837, bred by Mr. Booth, Cotham, near Newark; by Cedric, 3311; dam by grandson of Blyth Comet, 85; 22 gs., Rev. C. James. Rachel, roan, calved in 1837, bred by Mr. Booth, Cotham; by Cedric, 3311; dam by Nimrod, 4571; 22 gs., Mr. Bowley (Rachel is the dam of the heifer that won at the Smithfield Club Christmas Cattle Show, in 1845, the first prize of £20. Silver medal to the breeder and gold medal, as the best cow or heifer in the 6th, 7th, and 8th classes). Victoria, roan, calved in 1837, bred by Mr. Booth, Cotham; by Victory, 2800; dam by grandson of Blyth Comet, 85; 26 gs., Mr. Hewer. Jenny Dennison, red and white, calved in 1837, bred by Mr. Booth, Cotham; by Cedric, 3311; dam by Fisher's Son of Favorite, 1028; 24 gs., Mr. Lane. Kate Nickleby, red, calved in 1837, bred by Mr. Booth, Cotham, by Cedric, 3311; dam by Nimrod, 4571; 24 gs., Mr. Kendall. Verbina, red and white, calved in 1837, bred by Mr. Booth, Cotham; by Cedric, 3311; dam by Nimrod, 4571; 20 gs., Mr. Fowler. Portia, roan, calved in 1838, bred by Mr. Booth, Cotham; by Waverly, 5613; dam Crotchet, by son of Cato, 855; 37 gs., Mr. Smith. White Rose, white, calved in May, 1839, bred by Mr. Booth, Cotham; by Waverly, 5613; dam Rosa, by Cedric, 3311; 21 gs., Mr. Meek. Notts, red and white, calved May 9, 1841, bred by John Wilkinson, Esq., Lenton, near Nottingham; by Will Honeycomb, 5660; dam by Spectator, 2688; 31 gs., B. B. Colvin. Madelina, roan, calved November 28, 1841; by Harold, 8131; 46 gs., Agricultural College, Cirencester. Daffodil, roan, calved February 8, 1842; by Harold, 8131; 50 gs., Agricultural College, Cirencester. Rose, red and white, calved February 12, 1842; by Harold, 8131; 33 gs., Mr. Kendall. Myrtle, roan, calved Feb. 13, 1842; by Harold, 8131; 30 gs., Mr. Brookes. Lily, white, calved July 31, 1842; by Lord John, 4257; 42 gs., Mr. Smith. Alba, white, calved Dec. 23, 1842; by Harold, 8131; 42 gs., Lord Radnor. Lucy, roan, calved Feb. 28, 1843; by Harold, 8131, dam Lucretia by Helicon, 2107; 33 gs., Mr. Kilminster. Polly, red and white, calved April 1, 1843; by Lord John, 4257; 26 gs., Mr. Garne. Venus, roan, calved Oct. 20, 1843; by Harold, 8131; 35 gs., Mr. Hall. Victrix, roan, calved Oct. 20, 1843; 25 gs., Mr. Morton. Judy, red and white, calved Feb. 1, 1844; by Harold, 8131; 41 gs., Col. Kingscote. Mary, roan, calved Dec. 23, 1844; by Sweet William, 8646; 33 gs., Mr. Hall. Fancy, white, calved Oct. 28, 1844; by Sweet William, 8646, dam Flora, by Waverley, 5613; 27 gs., Mr. Smith. Lilac, roan, calved March 6, 1845; by Sweet William, 8646; 40 gs., Col. Kingscote. Ribes, red and white, calved Dec. 29, 1844; by Sweet William, 8646; 30 gs., Mr. Smith. Ruth, white, calved March 16, 1845; by Harold, 8131; 41 gs., Mr. Kendall. Vagary, roan, calved March 1, 1845; by Sweet William, 8646, dam Vestris, by Waverley, 5613; 28 gs., Mr. Vaughan. Daisy, roan, calved Dec. 11, 1844; by Sweet William, 8646; 43 gs., Sir T. Cartwright. Margaret, red, calved Dec. 7, 1845; by Sweet William; 29 gs., Col. Kingscote. Raspberry, roan, calved Oct. 29, 1845; by Sweet William; 43 gs., Mr. Tomb. Rhoda, white, calved April 11, 1846; by Sweet William; 28 gs., Mr. Hall. Rosamond, red and white, calved March 12, 1846, by Sweet William; 30 gs., Mr. Bowly. Violet, red and white, calved April 4, 1846; by Sweet William; 34 gs., R. Field, Esq. Moss Rose, red and white, calved Dec. 11, 1845; by Sweet William; 27 gs., Mr. Fowler. Helena, roan, calved March 12, 1846; by Augustus, 6752, dam Halcyon, by Will Honeycomb, 5660; 27 gs., Lord Radnor. Phœbe, roan, calved March 4, 1846; by Sweet William, 8646; 45 guineas, Mr. Tomb. Rosa, red and white, calved Feb. 23, 1837; by Sweet William, 8646; 19 gs., Mr. Smith. Judith, red and white, calved April 29, 1847; by Sweet William, 8646; 20 gs., Mr. Bryan. Kitty, roan, calved September 15th, 1846, by Sweet William, 8646; 36 gs., Mr. Smith. Red Rose, red and white, calved October 21, 1846; by Sweet William, 8646; 23 gs., Mr. Kilminster. Nancy, roan, calved February 10, 1847; by Harold, 8131; 30 gs., P. Albert. Magnet, roan, calved October 26, 1846; by Sweet William, 8646; 34 gs., P. Albert. Dahlia, roan, calved January 22, 1847; by Sweet William, 8646; 32 gs., R. Field. Rose Bud, roan, calved October 3, 1846; by Sweet William, 8646; 30 gs., Lord Ilchester. Amy, white, calved March 14, 1847; by Sweet William, 8646; 29 gs., Mr. Smith. Julia, red and white, calved December 11, 1847; by Sweet William, 8646; 24 gs., Mr. Watson. Ruby, red and white, calved September 7, 1847; by Victor, 8738; 30 gs., P. Albert. Kezia, red, calved November 1, 1847; by Prince, 9494; 20 gs., Mr. Tomb. Nanny, red and white, calved February 2, 1848; by Prince, 9494; 18 gs., Mr. Bogan. Matchless, roan, calved March 2, 1848, by Fitzhardinge, 8073; 34 gs., Prince Albert. Lupin, roan, calved November 14, 1847; by Prince, 9494; 25 gs., Mr. Hall. Lavina, roan, calved December 25, 1847; by Belton; 21 gs., Mr. Slatter. Roxana, red and white, calved July 29, 1848; by Fitzhardinge, 8073; 14 gs., Mr. Cambes. Eleanor, roan, calved

October 12, 1843, by a bull bought of the late Mr. Richard Lawson, of Standish: (the bull was got by Boz, 3201; dam Laura, by Helicon, 2107); 31 gs., Hon. Lady Cockerell. Emma, white, calved April 1, 1846, by Sweet William, 8646; 30 gs., Mr. Morton. Emily, roan, calved March 23, 1847; by Belton; 28 gs., Mr. Hoare. Phillis, red and white, calved April 6, 1847; by Belton; 20 gs., Mr. Slatter. BULLS:—Bandit, red and white, calved March 9, 1847; by Belton, dam Myrtle, by Harold, 8131; 29 gs., Mr. Watson. Snowberry, white, calved July 5, 1847; by Sweet William, 8646; dam Victoria, by Victory, 2800; 33 gs., Mr. Dore. Patriot, red, calved Nov. 7, 1847; by Bolton, dam Portia, by Waverly, 5613; 15 gs., Mr. W. Garne. Malton, red, calved Oct. 15, 1847; by Belton, dam Madelina, by Harold, 8131; 24 gs., Mr. Garlich. Durham, roan, calved Dec. 17, 1847; by Belton, dam Daffodil, by Harold, 8131; 20 gs., Mr. Fowler. Critic, roan, calved April 12, 1847; by Duke of Cornwall, 5947, dam Cinderella, by Helicon, 2107; 24 gs., Mr. Kendall. Leland, white, calved Aug. 24, 1847; by Delcroix, dam Science, by Sir Thomas Fairfax, 5196; 40 gs., Mr. C. Freeman. Vulcan, red and white, calved March 22, 1848; by Belton, dam Victrix, by Harold, 8131; 21 gs, Mr. Phillips Monarch, roan, calved Nov. 10, 1847; by Fitzhardinge, 8073, dam Mary, by Sweet William, 8646; 53 gs., Earl of Ilchester. Faithful, roan, calved Nov. 16, 1847; by Fitzhardinge, 8073, dam Fancy, by Sweet William, 8646; 10 gs., Mr. Cooke. Laurel, white, calved Nov. 28, 1847; by Fitzhardinge, 8073, dam Lilac, by Sweet William, 8646; 24 gs., Mr. Arkell. Rustic, roan, calved Nov. 29, 1847; by Fitzhardinge, 8073, dam Ribes, by Sweet William, 8646; 21 gs., Mr. H. C. Hoare. Ralph, roan, calved Dec. 6, 1847; by Fitzhardinge, 8073, dam Ruth, by Harold, 8131; 31 gs., Mr. James. Violin, roan, calved Feb. 1, 1848; by Fitzhardinge, 8073, dam Vagary, by Sweet William, 8646; 26 gs., Mr. Smith. Dewberry, roan, calved Feb. 17, 1848; by Fitzhardinge, 8073, dam Daisy, by Sweet William, 8646; 17 gs., Mr. S. Ackers. Jenner, roan, calved May 27, 1848; by Fitzhardinge, 8073, dam Jenny Dennison, by Cedric, 3311; 42 gs., Mr. Kendall. Vanquisher, roan, calved June 14, 1848; by Fitzhardinge, 8073, dam Victoria, by Victory, 2800; 30 gs., Mr. W. Hence. Albert, white, calved June 30, 1848; by Fitzhardinge, 8073, dam Alba, by Harold, 8131; 15 gs., Mr. Wood. Reveller, roan, calved Aug. 3, 1848; by Fitzhardinge, 8073, dam Rachel, by Cedric, 3311; 18 gs., Earl of Suffolk. Edwin, roan, calved March 7, 1848; by Belton; 18 gs., Mr. Cheers. Jupiter, 8196, roan, calved Dec. 30, 1843; by Harold, 8131, dam Rowena, by Cedric, 3311; not sold.—TOTAL: Cows and heifers, £1778 14s.; average, £31 15s. 3d. each. Bulls, £535 10s.; average, £26 15s. 6d. each.—TOTAL, £2314 4s.; general average, £30 9s. each.

SALE OF SHORT-HORNED BULLS AT SITTYTON.—Mr. Cruickshank's annual sale of short-horned bull calves took place on Thursday, the 14th Sept., and was attended by upwards of 200 of the leading agriculturists in the neighbouring counties. During the early part of the day, an inspection of Mr. C.'s extensive and beautiful herd afforded the greatest pleasure. After a comfortable luncheon, the company adjourned to the sale ring, where the celebrated bull, "Fairfax Royal," and his son, "Prince Edward Fairfax," were exhibited, to the gratification of all. Mr. Elrick, officiating as auctioneer, then commenced business, and sold the following lots in less than forty minutes:—Antagonist, by Wellington, £22 1s., Mr. Johnston, Ardgrain. Viceroy, by Fairfax Royal, £29 8s., Sir Thomas Burnett. Enterprise, by do., £32 11s., Mr. Baxter, Craigforthie. Philanthropist, by The Pacha, £21, Mr. Inkson, Berryleys. Westbury, by Fairfax Royal, £42, Mr. Humphrey, of Pitmedden. Lamartine, by do., £33 12s., Mr. Cromarty, Orkney. Diamond Fairfax, by do., £31 10s., Mr. Jopp, Boddam. Balmoral, by do., £44 2s., Mr. Walker, Wester Fintray. Fairfax Baron, by do., £31 10s., Mr. Smith, Cairnhill. Industry, by do., £35 14s., Mr. Durno, Jackston. Prosperity, by do., £23 2s., Col. Gordon, of Culdrain. Sheridan, by do., £22 1s., Mr. Petrie, Mill of Fintray. Cavendish, by do., £31 10s., Mr. Abel, Aquherton. Smithfield, by do., £47 5s., Mr. Russell, of Kinninmonth. Vice-President, by do., £37 16s., Mr. Cochrane, Glasgow-forest. Golden Eagle, by do., £29 8s., Mr. Milne, Fornet. Westminster, by do., £35 14s., Mr. Allan, Aikenshill. Montague, by do., £26 5s., Mr. Mackay, Tough. The Treasurer, by do. (lame, and not sold). Economist, by do., £21, Mr. Johnston, Drumwhindle.

ANNUAL SALE OF STOCK AT HAZELEY.—The annual sale of extra stock of short-horned cattle belonging to Mr. Jos. Gillett, of Hazeley Court Farm, took place on Wednesday, Oct. 4, and excited considerable interest among the breeders and agriculturists of this and the adjoining counties. To those who have attended the two previous sales the great improvement in the breed of the stock was very manifest, for there was not that marked difference between various portions as heretofore, but a high degree of excellence and pureness pervaded the whole. Many of the cows and heifers were perfect models in symmetry, and the bulls and bull-calves rich in colour, strong in constitution, and of the best blood and breed. It was impossible to look on the stock without being struck with the high degree of perfection to which the breed of cattle may be carried when directed with skill, judgment, and enterprise. Although it is admitted on all hands to be an hazardous undertaking, still if Mr. Gillett is remunerated according to his deserts, he has the satisfaction of knowing that he has already effected an immense improvement in this county, which needed it more than any other. A capital cold collation, excellent in quality and abundant in quantity, superintended by Mr. Watts, of Slough, was laid out in the barn, where H. Hamersley, Esq., of Great Hazeley, presided, supported by J. W. Henley, Esq., M.P., James Morrell, Esq., F. Field, Esq., — Peel, Esq., and a large number of distinguished agriculturists amounting to about 300. The sale then proceeded with much spirit, which characterised it throughout, and realized very close on £1,000. Some of the heifers realized as much as 36 guineas, and one of the bull-calves 29 guineas. A bull-calf, called the Admiral, and fetching 26 guineas, was bought by Mr. Aldridge, it was said for His Royal Highness Prince Albert. The principal purchasers were Mr. Parsons, Mr. Rowland, Mr. A. Gillett, Mr. Arkwell, Mr. Smith, Mr. Castre, Mr. Dodwell, Mr. Peel, Mr. Field, Mr. I. Gillett, Mr. Howell, Mr. Frampton, Mr. James, Mr. Gearing, Mr. Gale, Mr. Goddard, and Mr. Aldridge. We understand that Mr. Gillett has since been offered 150 guineas for the two heifers bred by him, upon which a reserve was made, but he declined the offer.

CALENDAR OF HORTICULTURE.—NOVEMBER.

The last article closed on the eve of the autumnal equinox; at that time there was the finest weather which had been witnessed since the arid month of May. The September sun was glorious, and redeemed the character of the summer; it acted as a charm upon the field and garden, and produced most beneficial results. At that critical period, however, the weather changed—it became fitful, and the wind fixing for a few days in the north-east brought a continuous rain, which saturated the land. September closed disagreeably; but October, after the 3rd day, became much finer, genially warm, and with abundance of beautiful sunshine: thus the gardener had opportunity ample to complete all his operations of neatness and order. I never saw the vegetable crops in finer condition, for although a hint of frost occurred in September, nothing had been seriously touched, so that we may look forward to much mild weather. One observation must be made, and we hope it may excite comparative notice. In every instance wherein the wind has been north-easterly, rain has fallen continuously—the clouds have completely covered the sky without a break. The same phenomenon again was noticeable, though to a less extent, on the 13th inst.; at that time the wind became cool, black clouds formed in the north, and showers fell as they passed over. The 14th was quite wet for hours, but the evening cleared. All this time, and on similar occasions, the barometer rose. The meteorological table will exhibit the conditions of the weather to the time when we must close this article. It remains to state that, having travelled to some distance, the digging of potatoes was observed to a considerable extent; and from all that could be learnt, though it is evident that a great loss of yield —perhaps from one-half to five-eighths—will have been sustained, yet as a whole the crop will be very considerable, even in the south. One fact is certain—the total destruction of the haulm forms no criterion; *that* has been more complete than in any former year; but in many instances the tubers have remained good and sound, some entirely so, in other cases to the extent of the major part.

Operations in the Vegetable Garden.

Sow for a crop of the earliest peas, in front of, but at some distance from, a south wall; there is always a risk, which may be obviated by sowing later in frames, and in them also may be sown early radishes, and the salad herbs, such as cress, mustard, cabbage-lettuce, to use when young.

Mazagan beans can be tried, and with a mild winter they may do pretty well.

Lettuces now in frames, and all other crops under glasses, should have plenty of air, in fine, open weather, but in no other.

Endive.—Continue to blanch the full-grown plants, by collecting together the leaves when quite dry, and tying them round, above the middles, with a string of bass; a sea-kale pot put over for two or three days blanches a plant very nicely.

Cellery of full growth should now be finally earthed, carefully and compactly; in hard frost a couple of long boards, laid ridge-wise, form a good protector.

Early in the month make the last planting of coleworts, and of strong seedling *cabbage* for hearting early in summer.

Asparagus, if not completed, should be finally dressed for the winter as before directed—filling the alleys with manure. Do the same by the artichoke beds and rows. Formerly plants were kept long, as stoles; but lately gardeners have made fresh plants every year by taking off strong suckers in April. Therefore the old plants should be stimulated by rich manure, to cause the development of well-rooted suckers.

Cauliflowers in frames, and under glasses, must have air; the decaying leaves are to be removed, and slugs should be watched for—remove these wherever seen, and prevent by sprinkling powdered lime over the surface of the earth.

Winter Flanders spinach may yet be pulled for use; it should be kept free from weeds, and where sparrows attack it, have a string of shoe-makers' twine or strong worsted strained over it.

Parsnips, carrots, beet-root, and *Jerusalem artichoke,* take up some in open weather for use; the two second, if frost threaten, may be all dug up and stored in dry sand. There is a good *little* carro from Holland; it is used for a regular supply by sowing monthly in the growing season. Where there is frame room and a little warm manure, it would be as well to try a sowing now.

Dig, trench, and manure all vacant plots, according to the requirements of the anticipated objects. For early *potatoes* ridge the plots, leaving hollows or deep drills eight or ten inches deep, and twenty inches asunder, using no manure excepting a generous sprinkling of common salt. Stiff land set up in ridges and covered with wood-ashes, the white ash of Hartley coal, or with carbonised peat, breaks

up by frost and becomes meliorated. In spring it can be speedily levelled, and will be found greatly improved for nearly every kind of vegetable.

Force *asparagus* by beds of leaves under frames, or in pits heated by dung linings or hot water, the work to be continued in monthly succession.

Fruit Department.

Apples already stored should be cared for; they decay rapidly—in the opinion of some persons, under a malady which resembles that of the potato; at all events, many shrivel, and others turn partially black as if they were scorched by an internal combustion. G. Lindley in his *Fruit Calendar*, says that "if some clean, dry fern can be had, the fruit should be laid upon it, reserving as much as will cover it over so soon as the frost sets in. Fine dry fern is by far the best thing on which to lay apples, and to cover them also, of any material whatever, as it is perfectly sweet, not liable to contract any unpleasant smell, and keeps sound much longer than straw." They who have the "right of common" whereon fern grows, will know how to avail themselves of the above recommendation.

Fig trees being exceedingly susceptible of injury should at the earliest be securely matted, so as to prevent the access of frost.

Vines also demand speedy attention, particularly if any clusters remain on them; these cannot now come to maturity, and we take this opportunity to state that, at any season, green and immature white grapes make the best British wine: 4 lbs. of such fruit to the gallon will be required—5lb. would be better; and therefore unripe grapes are always available with an economical family. Prune now, and finish entirely the regulation of the vines; but do not as yet prune other fruit trees or shrubs, unless press of business be urgent.

Strawberry plants may be divested of decayed leaves, and of all the runner strings, after which manured earth, decayed leaves of trees, or fronds of fern, should be laid around the plants.

At the end of the month the spur-bearing trees, apples, pears, and plums, on espaliers or wall, or as dwarfs, may be pruned, cutting back to good fruitful buds the shortened shoots, so as to leave each spur short and compact. Plant all fruit trees, by no means later than the first week; and see that the earth be fine, and that it be laid closely around each root and rootlet.

Forced Fruits.

The full grown pine plants are now kept dry and cool, in order to check growth; a very moderate heat at the bottom is required, and little or no fire heat beyond that which will keep off frost. Succession pines require a moist warm atmosphere of 70°, so as to insure constant advances. Warm lining outside, a bottom heat of 75 to 80, and a well-working range of hot-water pipes, are essentials. It would be wise to keep the Queen pines and the black Jamaicas in a separate department.

Flower and Shrubbery Department.

Bulbs.—Plant these in dry weather as soon as possible: the soil should be moderately rich—a light sandy loam, deeply comminuted; the roots two or three inches below the surface, covered and filled up with white sand. Crocuses are set less deep than tulips, hyacynths, and narcissuses: the true jonquil is preferable for its pure yellow tint and exquisite fragrance. Crown imperial gladiolus (of which there are now beautiful new varieties), bulbous irises, Star of Bethlehem, lilies of several kinds, can now be introduced. Besides the bulbous tribes we would postpone the planting of all herbaceous subjects till March or April. Some shrubs, may, however, be introduced, both evergreen and deciduous, at the beginning of November, unless the wet, cloddy state of the ground prove a hindrance. In sandy ground wet seldom is a preventive; and provided that the soil be so free as to fall readily among the rootlets, it may be beneficial.

Plants in pots, herbaceous or shrubby, must, without loss of time, be removed to a dry but airy situation, where complete shelter can be obtained. Brick pits, soundly built and glazed, clean and dry at bottom, with a bed of dry sawdust for plunging, offer the most certain protection to all semi-hardy plants. Cleanness, freedom from vermin, slugs, and cob-webs, are required, and ought also to be found in the greenhouse and stove. The most secure and safe covering for pits during severe frost is a well-made straw mat; it is, however, inconvenient in rainy weather.

Grass lawns ought occasionally to be polled, swept, and rolled, in dry weather; worm-casts would be thus removed, and a general neat appearance maintained. Remove in time, and at all times, every weed from gravel walks; if weeds once get a head, farewell to neatness—people lose in every way by neglect.

The weather continues to support its anomalous character. Rain falls whenever the wind is at that usually dry quarter—north to east. The ground is now again saturated, and scarcely a gleam of sun has occurred during ten days. The wind has just become westerly, and the mercury rises; hope, therefore, may be indulged that October will terminate more propitiously. As yet, the year has witnessed but two really fine periods—namely, during the month of May, and the three first weeks of September!

Croydon, 21st October.

METEOROLOGICAL DIARY—1848.

	Barometer.		Thermometer.			Wind and State.		Atmosphere.		
Day.	8 a. m.	10 p.m.	Min.	Max.	10p.m.	Direction.	Force.	8 a. m.	2 p. m.	10 p. m.
	in. cts.	in. cts.								
Sept. 21	29.83	29.83	47	69	57	S. East	gentle	fine	sun	fine
22	29.86	29.83	50	70	59	E., S. E.	gentle	fine	sun	fine
23	29.74	29.60	53	63	59	S. West	gentle	cloudy	cloudy	cloudy
24	29.41	29.39	54	66	56	S. E., East	gentle	fog	fine	fine
25	29.39	29.51	54	68	58	East	lively	cloudy	sun	cloudy
26	29.55	29.68	56	60	56	East	brisk	cloudy	cloudy	cloudy
27	29.70	29.74	53	63	54	E. by North	gentle	cloudy	cloudy	cloudy
28	29.76	29.78	54	56	55	N. East	gentle	cloudy	cloudy	cloudy
29	29.79	29.70	53	55	51	N., W. by N.	gentle	cloudy	cloudy	cloudy
30	29.75	29.75	50	62	55	Southerly	gentle	fine	sun	cloudy
Sept. 1	29.75	29.70	52	62	54	S. by West	gentle	cloudy	cloudy	fine
2	29.73	29.70	49	65	56	S., S. by East	gentle	cloudy	cloudy	cloudy
3	29.73	29.87	50	64	55	S. West	gentle	fine	sun	cloudy
4	29.87	30.02	55	62	61	Westerly	strong	cloudy	cloudy	cloudy
5	30.16	30.20	57	65	57	S. West	lively	cloudy	sun	fine
6	30.20	30.20	56	72	60	S. West	gentle	fine	sun	fine
7	30.20	30.14	54	73	62	S., S. West	lively	fine	sun	cloudy
8	30.08	30.12	56	68	55	S. West	gentle	fine	sun	fine
9	30.10	29.80	53	58	52	S. West	brisk	cloudy	cloudy	fine
10	29.73	29.83	48	56	51	Westerly, N.	lively	fine	cloudy	fine
11	29.92	29.24	42	58	47	Northerly	gentle	fine	sun	fine
12	29.98	30.00	41	52	43	N. West	light	fine	cloudy	cloudy
13	30.02	30.06	41	57	48	N. East	lively	cloudy	cloudy	cloudy
14	30.08	30.08	44	52	43	N. East	gentle	cloudy	cloudy	fine
15	29.97	29.86	40	48	44	N. West	gentle	cloudy	cloudy	cloudy
16	29.77	29.78	41	42	50	E. N. East	light	cloudy	sun	cloudy
17	29.83	29.87	48	48	40	N. N. East	brisk	cloudy	cloudy	cloudy
18	29.70	29.56	36	42	41	N.E., North	brisk	cloudy	cloudy	cloudy
19	29.56	29.75	37	48	44	Northerly	gentle	cloudy	cloudy	cloudy
20	29.79	29.79	42	46	42	Northerly	lively	cloudy	cloudy	cloudy
21	29.78	29.91	41	46	40	Westerly	gentle	cloudy	cloudy	fine

ESTIMATED AVERAGES OF OCTOBER.

Barometer.		Thermometer.		
High.	Low.	High.	Low	Mean.
30.610	28.740	68	27	48.9

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
58.6	48.6	53.6

Weather and Phenomena.

September 21—Beautiful forenoon, 111 deg. in sun, then changeable. 22—Equinox: fine and mild. 23—Wet; change; showers. 24—Fine. 25—Cloudy, with gleams. 26—Brisk easterly current, rain all the preceding night. 27—Gloomy; a little rain. 28, 29, 30.—Rainy; very little sun.

Lunations.—New moon, 27th day, 9 h. 35 m. morning.

October 1—Sober, quiet day; gleams. 2—Alternations; sharp showers. 3—Rain in the night; alternation of sun and gloom. 4—After much wet, fine intervals. 5—Finer. 6—Beautiful; balmy air. 7—Faint-black streaks of cirrus. 8—Rain, and a fine day; lunar halo. 9—Overcast; finer day. 10—Pretty fine; small shower. 11—Fine, cool autumnal day. 12—Hazy. 13—Change of wind to N.E., and rain-clouds form. 14—Wet night and day. 15—Close rain; clearing off; cold wind. 16—Finer morning and evening; small rain intervenes. 17—Gloomy; showers; afternoon finer. 18—Hint of snow; drying, cold air; small rain. 19—Changeable forenoon; finer evening. 20—Profuse rain last night and to-day. 21—Change of wind; broken clouds; clearing off.

Lunations.—First quarter, 5th, 2h. 1 m. afternoon. Full moon, 12th, 3h. 56m afternoon. Last quarter, 19th, 6h. 28m. morning.

Remarks Referring to Agriculture.—The extraordinary weather of this period merits attention, the dry genial weather coming from a western point, the continuous fall of rain invariably from the north to east. All the root crops are abundant; mangold and kohl rabi most productive. Ploughing has had favourable opportunities; and if a few days of sunny weather supervene, it will, with "wheat season," be brought to a conclusion.

J. Towers.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR OCTOBER.

We have at length to report a general conclusion of harvest operations for the United Kingdom. Respecting the yield of the grain-crops a great difference of opinion prevails, notwithstanding that thrashing has proceeded to some extent in nearly all parts of England. That the produce of wheat is barely an average, we have no hesitation whatever in asserting; but that of spring corn appears to be quite equal to last season. The inferior condition in which the majority of the new wheats were harvested is operating to some extent upon its value: hence, a comparatively low average, and a duty of about 5s. per qr., appear likely to rule between this and the beginning of March next.

The imports of foreign wheat have been somewhat considerable since our last, yet they have failed to have any important influence upon the value of fine English parcels, which have mostly sold at full prices. The middling and inferior kinds have moved off slowly, at drooping currencies.

The barley trade has slightly improved; but we have no improvement to notice in the quotations.

The best parcels of oats, as well as all kinds of malt, have sold freely at full prices.

All other articles of grain, including flour and Indian meal, have changed hands on somewhat easier terms.

The accounts which have come to hand from most quarters respecting the potato crop are far from satisfactory. That a large portion of it—say one-third—has been lost, scarcely admits of a doubt; and hence it is conceived by some persons that we are likely to have that esculent selling at very high prices during the winter months. It must, however, be observed that an unusually large breadth of land was planted with potatoes in the spring, and that we are receiving somewhat extensive supplies from abroad, and which doubtless will continue, should our prices offer anything like an inducement to ship. We are fully persuaded that the root will not keep well; and hence diseased potatoes are likely to be met with for some time to come.

On the whole, though we have had some very cold days, with a few light falls of snow, the weather during the greater portion of the month has been seasonably mild; but the heavy and almost continuous rains have had a somewhat prejudicial effect upon out-door farm labours. Ploughing has not, therefore, made that progress we could desire; and scarcely any wheats have as yet been sown.

There has been an unusually large quantity of pasture herbage for the stock—so much so, that great difficulty has been experienced by the graziers to keep it sufficiently low for the sheep.

The rains have brought forward the turnip crop somewhat rapidly. In all parts of the kingdom it is turning out extremely good, both as to quantity and quality; indeed, we may observe that we have seldom seen a larger or better produce than is the case this season. It will, therefore, be perceived that both beasts and sheep—especially as the quantity of hay on hand is very extensive—have fared extremely well. We could desire to say as much in respect to the prevailing epidemic: that disease has, we regret to state, been considerably on the increase; and several severe losses have been sustained in the north of England and elsewhere. The foot-rot in sheep has made its appearance to some extent in the midland counties, as well as in Sussex.

The supply of beasts in our various grazing districts still continues large, notwithstanding the liberal numbers which have found their way to our markets during the whole of the present year. The quality of that description of stock is, however, by no means first-rate.

There still exists a deficiency of sheep; but that deficiency is certainly not equal to what we have had occasion to notice at some previous corresponding periods of the year. That it will take another year or two to increase the number of sheep to a full average, is tolerably certain. Prior to the close of that period, we must reasonably expect mutton to be selling at comparatively high prices, although the imports of live stock from abroad may prove extensive. Beasts have been selling at very low prices, owing to the large numbers brought forward. The stock fairs and large marts have been well attended by dealers. As the supplies have somewhat fallen off, prices have not ruled more than from 5 to 7½ per cent. lower than last year.

Our advices from Ireland and Scotland are to the effect that the corn trade has been far from active; and in some instances prices have had a downward

tendency. The stocks of old grain on hand are by no means large, while the foreign imports have been but moderate. The shipments of grain to England have been smaller than for a series of years past, if we except those of last season.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

As we have long anticipated, somewhat heavy supplies of beasts—especially English breeds—have been on sale in Smithfield, as well as nearly the whole of the leading provincial markets held during the past month. We may observe, however, that the general quality of the beasts has proved inferior, and unsuited to the wants of the leading butchers. The beef trade has been in a very depressed state, and prices have suffered a decline of from 2d. to (in some instances) 4d. per 8lbs. Although no material increase has taken place in the numbers of sheep brought forward, that description of stock has ruled dull in sale, at drooping currencies. The veal trade has been in a very inactive state, and prices have fallen from 2d. to 4d. per 8lbs. In pigs no decided change has taken place; but the demand for them has been far from brisk. The accounts from the large grazing districts agree in stating that the number of beasts at this time in the country is seasonably large; and we have no doubt whatever—as the graziers are very unwilling sellers at the present low prices (which entail a serious loss upon all transactions), and as the supply of green food (turnips in particular), as well as hay, is unusually large—that it will continue to increase under the operation of free trade principles. For some considerable time the value of mutton has been well supported in the metropolitan markets; arising chiefly from the want of adequate numbers in the flock districts. This difficulty is now rapidly passing away; and, should the importations from abroad continue on a liberal scale during the next four months, we should not be surprised to see really good mutton selling at 4s. per 8lbs. by the middle of 1849.

Since our last, the following imports of live stock from abroad have taken place into London:—

	Head.
Beasts	2,962
Sheep	10,669
Lambs	239
Calves	803
Pigs	116

At the northern outports 5,600 head have arrived from Holland and Germany; and at Southampton 100 oxen from France, 82 ditto from Portugal, and 154 ditto from Spain.

The annexed comparison shews the total imports at the corresponding periods in 1845, 1846, and 1847:—

Beasts.	Sheep.	Lambs.	Calves.	Pigs.
October, 1845.				
1,143	1,621	—	—	27
October, 1846.				
4,845	8,768	—	325	—
October, 1847.				
5,433	17,635	378	1,225	433

The falling off in the supplies from abroad is wholly attributable to the low prices at which beef has been selling in Smithfield and elsewhere. Very few beasts or sheep have come to hand from abroad in a diseased state. In the quality of the beasts we have not the slightest improvement to notice; but that of the sheep and calves has been superior to most previous importations.

We regret to state that some severe losses of both beasts and sheep have been experienced since our last. The former have suffered to some extent from the epidemic; while the latter have become lame and unfit for travelling, from the foot-rot. The numbers of stocks shown in Smithfield have been as under:—

Beasts	20,177 Head.
Cows	487
Sheep	114,760
Calves	2,200
Pigs	3,140

COMPARISON OF SUPPLIES.

	Oct., 1844.		Oct., 1845.
Beasts	14,000		17,781
Cows	500		473
Sheep	162,000		120,370
Calves	1,260		1,385
Pigs	1,429		2,601
	Oct., 1846.		Oct., 1847.
Beasts	19,254		19,509
Cows	456		572
Sheep	118,210		126,480
Calves	1,504		2,000
Pigs	3,740		2,713

The bullock droves in the month just concluded have been derived as follows:—

Northern districts	7,200 Head.
Eastern do	800
Western and midland do	4,550
Other parts of England	1,810
Scotland	910
Ireland	240

COMPARISON OF PRICES.

Per 8 lbs. to sink the offal.

	Oct., 1847.				Oct., 1848.			
	s.	d.	s.	d.	s.	d.	s.	d.
Beef	4	0 to 4	10		2	4 to 4	0	
Mutton	3	8	5	2	3	4	5	0
Veal	3	8	4	8	3	0	4	2
Pork	4	0	5	2	3	10	4	10

Up to Newgate and Leadenhall markets full

average time-of-year supplies of country-killed meat have come to hand. Generally speaking, the demand has ruled heavy, at drooping prices. Beef, from 2s. 2d. to 3s. 6d.; mutton, 3s. 2d. to 4s. 4d.; veal, 3s. to 4s.; and pork, 3s. 6d. to 5s., per 8lbs., by the carcass.

NORTH HANTS.

Since the close of the harvest—which, in some parts of this county, was a very prolonged one—farmers have not made great progress in preparing the land and sowing it with wheat for the next year's crop. From Farnborough to Winchfield — in the parishes of Hartley, Westpall, Rotherwick, Heckfield, Sherfield, and Bramley—some of the farmers have sown a considerable breadth, and, where up, it looks strong and healthy, where the land is not too much saturated with the late heavy rains. On the strong lands about Basingstoke, Old Basing, Sherborne, Oakley, Cliddesden, Steventon, and Dummer, there is not so much in the ground : a considerable quantity of land yet to manure and plough. On to Whitchurch, by Overton, St. Mary's Bourne, Hannington, and Kingsclere, the waters are very much out ; the works of the husbandman are therefore nearly at a standstill ; so that, unless some fine, dry, genial weather follow, the sowing this autumn must be very late. The farmers have been thrashing out very freely, to meet their landlords and other expenses; and we were sorry to hear that the yield of wheat is in most places considerably below an average, and nearly three sacks less per acre than the yield of 1847, besides a falling off of at least 4lbs. per bushel in weight. Barley also thrashes out very indifferently ; much light among even the best, from its ripening so irregularly ; of best malting qualities there will be a great deficiency, compared to last year's bulk ; therefore, all above the weight of 56lbs. per bushel, and of good colour, must keep their price, if not rise a few shillings per qr. Old malt is held firmly by the maltsters for a further increase in price. In many parts there is not above four quarters per acre yield, some even less. Oats, beans, and peas vary considerably, yet, on the whole, there will be more in quantity than was expected. There is everywhere a great abundance of turnips and other green food for cattle, besides large stacks of hay, clover, &c., with the fields well stocked with sheep and oxen, all apparently doing well on the open grounds at present ; where the sheep are penned for turnips, we were informed they are recovering from their halt or lameness, graziers having found out a plan to save them. The much-dreaded small-pox has also disappeared in this part of Hants, vaccination being now generally resorted to, and proving successful in stopping this vexatious disease. The increase of the flocks is great in many parts, and it is thought by many experienced graziers that there cannot be for some time, if ever, so great a falling off in number as took place three years ago. The meadows and yards are filled also with beasts of every description, besides many stalled up for fattening, so that there is every appearance of meat coming down. Of swine there appears also plenty of both fat and lean ; they are therefore also falling to a moderate price. Labour is very scarce, many able-bodied men out of work, and already beginning to feel the pinchings of poverty ; thus early are many driven to seek parochial aid, and how the winter will be got through seems to create in every feeling mind wonder, doubt, and fear : the trying harvest preventing the hardworking labourers from saving a little for the coming winter, the total destruction of their potatoes making them spend their scanty earnings in bread alone, which consumes every fraction, leaving not a 6d. weekly for every other common necessary : very many of these poor families almost without clothing, and at home, with very few comforts to keep them warm through the winter's cold. Those who are fortunate in being employed have but 9s. to 10s. per week, if with large families ; some but from 7s. to 8s., and strong single men 6s.

NORTHUMBERLAND.

The following table is extracted from the meteorological register kept at the rooms of the Literary and Philosophical Society, Newcastle-upon-Tyne; the observations for which are made at an elevation of 121 feet 3 inches above the level of the sea, 18 feet 1 inch above the ground, in 54 degrees 58½ minutes of north latitude, and about eight miles from the coast of the German Ocean.

THERMOMETER.

Week ending	Maximum of range of daily observation.	Daily mean.	Minimum of range of daily observation.	Daily mean.	Mean of daily observation for both max. and mean.
Sept. 20	55.5 to 66.5	61.43	36 to 51	44.21	52.82
„ 27	56 „ 67	60.78	48 „ 52	50.64	55.71
Oct. 4	54 „ 61	57.22	47 „ 53	50.36	53.79
„ 11	56 „ 68	63.28	47 „ 56	50.64	56.96
„ 18	44 „ 53.5	50.93	31.5 „ 47	42.79	46.86

No. of days on which Rain fell.	Depth of Rain in inches.
0	0
3	.85
4	.42
1	.20
5	1.38
Total 13	Total 2.85

Since my last letter of the 21st ultimo, the weather then reported so favourable to harvest operations, changed to a degree of wetness, unusual even for so advanced a period of the year; and on the morning of the 17th instant a heavy fall of snow took place. The consequence of weather so unpropitious has been that the portion of the corn crop that remained unsecured has sustained serious damage. It should be understood, however, that the damage spoken of is confined to a portion only of wheat sown late in spring after turnips, late ripening kinds of oats, and beans ; and it should also be remarked, that were farmers to be more careful in selecting seed of an early ripening sort of wheat to sow on their turnip-land in spring instead of the common autumn sorts, and to discontinue the growth of the Tartary oat (so commonly cultivated in the southern part of Northumberland, and throughout the county of Durham), the very serious casualty of damaged corn crops might to a considerable extent be avoided. In consequence of the extreme wetness of the weather a very small extent of fallow land has as yet been sown. The price of grain during the last five weeks has been remarkably steady, at 23s. to 26s. per qr. for oats, according to kind ; and 52s. may be stated as an average price during the same period for wheat grown in the district comprised in the counties of Northumberland and Durham. The Newcastle cattle market has been plentifully, but not in any degree excessively, supplied during the past four weeks with both beasts and sheep ; and prices have during that period been firmly maintained, at nearly 7s. per stone of 14lbs. for prime beef, and about 6½d. per lb. for the best mutton. Lean stock, both beasts and sheep, are in good demand and fetching high prices ; and good dairy cows, which are somewhat

scarce, are also in request. Pork pigs are worth fully 7s. per stone; and store pigs are very scarce, and most extravagantly dear. Turnips, throughout the whole of the counties of Northumberland and Durham, are, with a few exceptions, a most abundant crop; and potatoes are also a heavy produce, of excellent quality, and but little affected with rot in any part of the district comprised within the limits of the counties of Northumberland and Durham; but in Cumberland, where this esculent is extensively cultivated, the rot is very prevalent. The price of potatoes in Newcastle market is about 9s. per 20-stone weight for those of the best quality.

Statement of the supply of fat beasts and sheep at Newcastle cattle market, from 26th of September to 17th October, 1848, both days included, and that for the corresponding period in 1847:—

1848. Beasts	2,274	Sheep and lambs..	23,155
1847. „	2,271	„ „ ..	13,032
Increase in 1848 ..	3		10,123

—October 23.

BUCKINGHAMSHIRE.

It is said the name of October is derived from the Latin—*octo*, eight, and *imber*, a shower of rain. Now, assuming this to be true, the present month has certainly lost nothing of its ancient character, as it has rained almost continually, and has added a wet precarious seed time to a late troublesome harvest, which is not even yet entirely finished. Wheat sowing has been held in abeyance by the continued wet weather, and at no corresponding period, for many years, has been so far in arrears, nor have the general operations of the farm been in a more backward state. All are now looking forward with great anxiety to an improvement in the weather, as the proper season for sowing wheat is nearly over, and the fallows, generally, are in a wretched plight for the reception of the seed. The early brairds, on light soils, have rather a yellow sickly appearance from so much rain, but many of the clay fallows have a most portentous promise for the future. Wheat and cattle markets have been very flat during the month, although the supplies have not been over an average. The present prices are not remunerative to the producers on ordinary land; the past season has been very expensive to arable farmers, and the corn crops, so far as we have seen tested, fall short of last year's. Potatoes are now generally raised, and keep better than was anticipated; the yield is, however, defective, so that sound tubers may be expected to realize high prices. Fatting cattle are now generally tied up, and many are being fed with prepared food, by a cooked compound of linseed and other meal, turnips and chaff, &c. The exact merits of this new method of feeding beasts has not yet been clearly, fully, and fairly enough put before the public, by a variety of persons; but now that so many experimenters are in the field, it is but fair to suppose that the real truth will be arrived at for the advantage of the public. Fatting sheep have been put upon turnips for some time, but owing to the wetness of the weather, &c., have not made much progress in the way desired. Many persons are preferring yard instead of field feeding for their sheep, and we have adopted this plan, as feeling assured that the animals will improve more, with less food. These rains again forcibly show the necessity of drainage, which is not so common as it ought to be; but surely this is not the time to let stagnant water injure the land, when there is a superfluity of labourers to drain it off. Let landlords encourage their tenantry; let the tenantry employ the labourers; then will every interest flourish, and the whole human family be benefited both for the present and the future. Our constant motto is—"Useful and universal employment."—Oct. 27.

NOTTINGHAMSHIRE.

Since my last report, the patience of the farmer has been tested by the gathering in the harvest. The weather was extremely unsettled, and what corn was got in—at what might be termed the commencement and the middle of that season—was got in in bad condition; at the close, however, we had fine weather, and the afternoon farmer had the best of it. A considerable quantity of the crops were damaged. There is very little wheat but what is sprouted. Barley is much stained, and a considerable bulk is fit only for pigs or cattle. A great quantity of wheat has been thrashed out: the yield generally is said to be an average, but the grain is weathered, and the fine bright hue we see after hot dry summers, is not now to be met with; or, if at all, in very partial instances: smut is very prevalent. The potato crop is nearly a failure; in many instances not worth lifting out. Our farmers are busy putting in wheat, and preparing the ground for that purpose. On the limestone and sandy soils they may sow very well; but such is the humid state of the weather, and the saturated state of the ground, from the recent and long continued rains, that the occupiers of the clay soils cannot sow at present; and should the present weather continue, a great breadth of this description of land will have to remain till the spring of next year. The pastures are generally good, and our eddishes what you might expect—excellent. Turnips on all dry soils are good. So far, the prospect is cheering to the occupiers of such lands: on clay soils and undrained districts they are a failure, and that failure ought to teach the occupiers and owners that important lesson, that the best management is thorough draining; many districts might be made to produce double what they now do, were the water taken away; and why it is not in many instances seems a mystery: at Annesley there are no improvements in progress. With whom does the blame rest; the landlord, the tenantry, or both? But there's my Lord Melbourne, and his tenantry, who look upon their lands with as much security as my lord does himself, how is it that more draining has not been done there than has been? And in the neighbourhoods of Ilkeston, Trowel, and Heanor, what are the agents of the large and influential landed proprietors doing? Why nothing, comparatively speaking. A landlord may be content so long as he gets his rent, and the tenant so long as he can meet the demands of his landlord; but both are a clog upon society if the productive powers of the soil are withheld through a rude system of husbandry. The labourer and mechanic want employment, and the population feeding; and it is a sacred duty connected with property that they must be both employed and fed: hundreds of labourers might be employed in draining and in carrying out a good practical system of cultivation, who are now in beggary; and the soil might easily be brought to produce double the quantity they now do. Much has been said, and is said, about security of tenure, as the panacea for every ill affecting the farmer; but we think the abolition of the corn-laws will do more for the tenant and labourer than any legislative enactment ever could have done (feudalism and corn laws are an inseparable pair). Our cattle markets are well supplied, prices moderate; good calving cows fetch fair prices. At most of our fairs good horses have been inquired after. Our corn markets have been well supplied, and the prices very wide for new wheat; say from 46s. to 60s. per quarter. We think a good many of our farmers, who are bringing their corn so freely to market, supposing that the only nominal

duty which there will be on foreign corn will injure them, are worse frightened than ever they will be hurt. The loss in the potato crop will outweigh all foreign importation. The demand for labour is moderate: the few railways now in formation very little affect us, for they are made so tardily that we might almost fancy a very poor man was at head quarters, and the probability is, that as a direct benefit in the shape of labour, railways will for ever cease to be of much benefit to the labourer; and the question must be seriously put to the owners of property, in agricultural districts especially, what must we do with and for our labouring population?

HARVEST IN EAST LOTHIAN.

Some weeks ago we noticed in the *Ayr Advertiser* the earlier operations of East Lothian harvesting, purposing to conclude our report on the crop being finally gathered in. This consummation, however, seems to have been, from the unfavourable state of the weather, indefinitely postponed. Winter-sown wheat, and such other portion of the crop as ripened early, were cut down and secured in the most satisfactory manner. This may be termed a first harvest, as the spring-sown grain was so far behind, that an almost total stop was put to reaping, and fields might then have been seen cleaned, manured, and ploughed for the next crop, whilst the adjacent enclosures were still green and uncut. Till about the 23rd of September the weather continued so perfectly dry that farmers began to wish for rain, as the growth of the turnip crop was arrested, mildew had made its appearance, and the pastures were becoming hard and dry. After this we had some wet days, and latterly the weather has become utterly broken, and a great quantity of rain has fallen. We regret to say that a considerable quantity of the later portion of the crop, particularly in the higher districts of the county, is still exposed, whilst the continuance of bad weather gives small hopes of its being carried before being seriously injured by wet. A few bean stacks may now be observed, but the bulk of this grain is yet in the field. It is still too soon to talk with certainty as to the yield of this year's crop, but we are still of opinion that it is an average one. It has, upon the whole, bulked better in the barn-yard than it seemed to promise in the field. On being first brought to market it weighed considerably more than corn at the corresponding period of last year did; and though it has not maintained this superiority, we believe the wet weather sufficient to account for the falling off. Potatoes have been generally lifted, and though few fields are entirely free of disease, yet the damage hitherto done is very slight indeed. In scarcely any field would it have been noticed at all had not every one been on the outlook to discover it; and the crop, we consider, is an abundant one. We have only to hope that the pits may escape as well as the fields have done. Turnips will now be what they at first promised to become—an excellent crop. The rain came just in time to save them—a week longer, and it would have been too late. Grass having given way, both cattle and sheep have been put on turnips earlier than usual. The disease in cattle having now become a chronic malady, has turned more attention than formerly to sheep; nevertheless, a considerable number of cattle have been brought into the county for feeding; and the great progress the turnip crop has latterly made, has caused stock to rise in value.—East Lothian, Oct. 17.—*Ayr Advertiser.*

AGRICULTURAL QUERIES.

TO THE EDITOR OF THE MARK LANE EXPRESS.

A correspondent states as follows:—"I have lately built a tank, into which I have turned some house drains and a privy or two, together with wool-combers' suds, and I wish to inquire from you or some of your readers, whether this liquid (I mean the above mixture) would be suitable manure for potatoes, and if so, what would be the best method of applying it. A friend of mine here recommends common coal ashes, taken from the fire grate, and kept dry till they are wanted, when they are to be saturated with the liquid, immediately before planting the potatoes: the dryness of the ashes will enable them to absorb a greater portion of the liquid. The ground upon which the potatoes are to be grown is now a meadow, and the soil is good—14 in. deep, and rests upon clay. The tank contains nothing more than what is specified above, and is covered over."

A correspondent inquires "the proper time to take up carrots; whether the green should be cut off or wrung off; and the best method to put them away, so that they may take no damage from heating, or from the frost; and how many tons per acre are considered a fair crop of red carrots."

A correspondent inquires "The best time for sewing wheat after clover? Also the best mode of doing it, in order to avoid the depredations of the wire worm?"

A correspondent inquires "What is considered the proper quantity of linseed to be given to a heifer per day, to keep her in fair condition through the winter, in addition to a few turnips and straw? Not having convenience to boil the linseed, he steeps it 24 hours in cold water." He also inquires "The quantity of raw linseed that would be sufficient, when steeped, for one heifer (say yearlings and two-year-olds, &c.). The quantity required each day for the lot."

If Mr. Essam, of Sutton-upon-Trent, will be kind enough to state what quantity of mustard is required per acre, and how it is to be applied to prevent wire-worm from destroying wheat, he will greatly oblige a young farmer, who has been much troubled with the worm in both wheat and oats.—*Tuesday, Sept.* 26.

ANSWERS TO AGRICULTURAL QUERIES.

FOOT ROT IN SHEEP.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—If your correspondent, whose sheep are lame, were to drive them over fresh lime, scattered about a shed, for ten minutes twice a day, pare their feet, and cut off all the decayed hoof once a week, he will find they will derive much benefit.

I have dipped their feet in a solution of sulphate of copper, spirits of salts, and turpentine, twice a week, but find lime much cheaper and a more speedy cure.

Yours, obediently,

Horton Hall, Sept. 9. B.

SMUT IN WHEAT.

SIR,—The question of smut in wheat, at any time interesting to agriculturists, is just now more than usually so, from the near approach of seed-time, as well as from the publication of the letter of a "Tenant Farmer," in the third page of your paper of Monday last. From that letter I collect that the writer is an advocate for the application of a mineral extract (sulphate of copper), which, after being dissolved according to prescription, is to be mixed with the wheat so intimately, that "every grain is perfectly wetted."

I do not doubt the efficacy of this application if care-

fully applied, and the corn intended for sowing is not in an extraordinary foul state; but knowing the remissness with which many important operations in farming, when left to servants, are performed, and having for several seasons relied entirely upon the use of water and salt only with much success, and at an expense even less than that of the "Tenant Farmer," I hope I may be excused for troubling you. My plan has been to provide three rather large open tubs, capable of holding in immersion a wicker-skep of the contents of a bushel: into two of these, filled with water, I put in succession the skep (containing about three pecks of wheat), carefully skimming off any impurities which may rise to the surface of the skep, repeating the process in the second tub: this done, I then immerse the skep in the third tub, filled with a strong brine of salt and water, again skimming if necessary; afterwards spreading the wetted corn on a floor, and applying a slight sifting of lime, if the drying was required soon.

I am persuaded that any process which does not *remove* the impurities already existing in the bulk must be defective; and I have a strong opinion that the simple application of water (if freely used) is sufficient to counteract the effects of inherent smut.

Some years since, a relation, a large farmer in Norfolk, procured, at considerable expense, a quantity of the celebrated Burwell wheat, from near Cambridge; when it reached its destination, it was found to be very much tainted with smut. This wheat was washed in a brook, upon the same principle as I have stated above, afterwards immersed in brine, and the produce was entirely free from the disease. I am constantly seeing wheat in this neighbourhood greatly injured in this particular, attributable, in my opinion, to the very defective manner in which the seed is prepared for the land.

Should you think these observations worthy of insertion, they are at the service of your readers.—I am, sir, yours very obediently, GEORGE BAKER.

Broomfield House, Headingly, Sept. 13, 1848.

SMUT IN WHEAT.

SIR,—I waited to see if any of your numerous correspondents would reply to the inquiry respecting the use of blue vitriol as a dressing for the prevention of smut in wheat.

I observe one gentleman has offered his specific, and I beg the favour of a short space for the following, which I have used, not for four years, but for nearly twenty, with universal success. I also have given the recipe to many friends, and in no case has it yet failed of producing the desired effect.

I use half a pound of vitriol to a quarter of wheat, and apply it thus:—Shoot down on a floor one quarter of wheat, fill two buckets with boiling water nearly to the brim, but leaving room for a good shovelful of quick-lime to each bucket (this causes considerable ebullition), stir it up, and in a minute or two pour into the heap of wheat, together with the vitriol (previously dissolved), turn all over once or twice, or until all is well saturated; throw it aside, and repeat another quarter of wheat, &c. This is done over-night, and will be found in capital order for the drill next morning. The heap of wheat must be nicely swept up, and an opening made in the centre to hold the two buckets whilst the operation of adding the lime is going on. A puncheon or earthen pippin should be used for the vitriol, in which is put half a gallon of the boiling water, and the half-pound of vitriol ready-powdered from the chymist. The process of doing three quarters lasts about an hour, having a couple of hands engaged. Sweep all well up together, that no straggling corns be left unsaturated. Throw all together in one heap, and cover down with the sacks to be used, until morning. If the weather prevents going to work next day, spread it on the floor to prevent heating, and it will not hurt for a month.—I am, sir, yours, A RUTLAND FARMER.

13th Sept., 1848.

BLUE VITRIOL AS A PREVENTIVE OF THE SMUT IN WHEAT.

SIR,—In reply to your correspondent who desires to know the result of using blue vitriol as a preventive of smut in wheat, I beg to say that I drew attention to the subject in your paper I believe ten or eleven years ago. I continued to use blue vitriol from that time with complete success; my last crop of wheat (upwards of ninety acres) was grown on Oldplace farm, East Tisted, in Hampshire, and I am not aware that there was one smutty ear in the whole crop.

I used one pound of blue vitriol to three bushels of wheat. For further particulars see p. 162, vol. ii., "British Husbandry," published under the superintendence of the Society for the Diffusion of Useful Knowledge.

I am, sir, yours very respectfully,

Holloway, Sept. 9. GEO. DYER.

SIR,—In answer to your correspondent signing himself "Edward Akers," who attributes the potato disease to the "unwise habit of cultivating from the tuber, and not from the seed," he only founds this assertion on a supposed similar disease in the dahlia, which, like the potato, is raised from the tuber, and never brings forward any evidence from potatoes raised in the way he recommends: it is therefore obvious that his theory of the potato disease has no other foundation than Mr. Edward Akers' own imagination.

A paragraph has just appeared in the papers, announcing (as I expected) that those potatoes which had been raised from seed brought from Mexico had been quite as much affected by the disease as those grown in the ordinary way.

I was once of the same opinion as your correspondent respecting the necessity of growing potatoes from the seed; but having tried it, as in the previous case, it gave no security from the disease.

I would recommend to your correspondent the perusal of a paper on the potato disease, which appeared in the "Farmers' Magazine" a month or two since, as containing the most sensible explanation of the origin and means of prevention of that dreadful misfortune.

As well as Mr. Edward Akers, there are some more of your correspondents, to whom I must say—

> "There is a chiel amang you taking notes,
> And 'faith he'll print them,"

if they are not more careful in the assertions they make, and the advice they give to farmers, who, honest souls, may well laugh at science, such are the absurd contradictions proceeding from would-be scientific pens.—Yours respectfully,

ONE THAT FOLLOWS THE PLOUGH.

SIR,—In August last a person, under the signature of "G. C.," addressed a private letter to me, in consequence of my communication to you on the disease in cattle called the pleuro pneumonia, requesting if I was desirous of obtaining further information on the subject, I might do so through the *Mark Lane Express*. As it is most desirable that all information possible should be obtained of this said disease, I and the public would be much obliged to "G. C." if he would communicate through the *Mark Lane Express* all he knows on the subject. I remain, &c.,

Thorpelands, Oct. 13. C. HILLYARD.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ALRESFORD (HANTS) FAIR, Oct. 19.—Not so large a number of sheep as last year; the chief part were of the Hants and Wilts Down breeds. Trade was exceedingly brisk, the abundance of keep inducing many to purchase an extra quantity this autumn. Some we observed still suffering from lameness, but certainly not so bad as at Wilton and Weyhill fairs. Best Down ewes in lamb fetched 40s. to 44s. each; ram lambs from 50s. to 70s. do.; best large wethers 44s. to 45s. do.; nearly all were sold early in the day. Graziers in this part of the county, and generally through Hants, have nearly twice their usual number of sheep on their land, the general feeling being now to increase their flocks, which for the last two or three years has been materially lessened.

APPLESHAW AND WEYHILL FAIRS.—A correspondent, who has attended these fairs for the last 25 years, states that "at Appleshaw there might have been about 35,000 sheep, but that was the most, and there were not 2000 unsold." At Weyhill he says there were not more than 90,000 sheep penned, and that there were not any Cotswolds, Dorsets, or Somersets. He further states that in the report we gave, the price of horned ewes was over-rated, as sold at Appleshaw, as the highest price was for fifty sold by Mr. Matthew Paull. Plenty of good ewes sold at from 34s. to 42s., which was about the general run of the fair.

AUGHRIM FAIR.—It was well attended, wether hoggets brought from 27s. 6d. to 30s.; and two-year-old heifers from £7 to £8. The demand was good, and prices were even above the figures at our last fair week for the same class of stock. This fair is celebrated for turkeys—the number was not considerable, but the birds were very fine; from 2s. 3d. to 3s. was given.

BANBURY FAIR.—The quantity of beef was small, and the trade dull. Of sheep there was a fair supply, and sellers considered there was an improvement in the trade, inasmuch as they got a price offered, which on the preceding market-day they were unable to do. The cheese fair is extinct; there was not a single load.

BLACKBURN FAIR.—The quantity of cattle was unusually great; of the quality however, with very few exceptions, nothing favourable can be reported. There was also a numerous attendance of farmers, jobbers, &c. Notwithstanding the large number of beasts shown, prices ruled high, particularly for calvers, which were quickly disposed of at increased quotations.

BRIDPORT FAIR was not so well supplied with stock as on former occasions, which may be partly accounted for by Axminster Fair falling on the same day this year. With the exception of about 20 bullocks and heifers sold by auction, comparatively few beasts changed owners. Household cheese was in abundance, and sold from 28s. to 35s. per cwt. according to quality. Somerset, from 56s. to 65s. 8d.

CAISTOR SHEEP FAIR was well attended by respectable buyers from the distant parts of Lincolnshire and other counties. The quantity of sheep penned was not so large as at the last fair, and the prices not so high on an average by 4s. to 5s. a head. The beast market was very full of very excellent cattle; a great many were sold, but at prices lower than at Palmsun Fair, by several shillings a head. The fair had also many useful horses, better in general than is expected at this place, which is more famed for sheep and horned cattle.

CHESTER CHEESE FAIR.—There was a large quantity of cheese, but not by far so much as had been expected. Prices were somewhat similar to those obtained at the corresponding fair last year. The best qualities were from 51s. to 63s.; middling, from 50s. to 55s.; and inferior sorts from 45s. to 50s. per cwt. Business was not brisk.

DALKEITH FAIR, Oct. 17.—The show of cattle was about an average, and the demand for such beasts as were fit for feeding was good, and prices ranged from £5 10s. to £7 16s. for two-year-old queys. Year-old stots from £4 to £7 10s. Two-year-old stots from £8 to £12. Irish beasts were in fair demand, prices being from £4 10s. to £6 for year-olds. A few of the inferior quality of the stock was left unsold, but altogether the market was considered a good one. There was not much business done in the horse market; the prices asked by the dealers being too high, varying from £25 to £35 for good horses.

DEVIZES FAIR, Oct. 20.—Of sheep there was a larger supply than usual; the trade in ewes was heavy, and prices from 2s. to 3s. each lower than at Weyhill fair. Lambs, however, were in good demand, and sold very readily, the prices being to the full as good, if not rather better, than at that fair. Ewes, 28s. to 33s. each; wethers, 30s. to 36s.; and lambs, 20s. to 28s. There was a short supply of beef; prices from 9s. to 10s. per score lbs. There were a good many horses, generally of a rough description; those of a superior sort sold freely; but all others were dull of sale. SECOND DAY.—The greater portion of store oxen, cows, and heifers sold yesterday, the moderate and inferior stood but a poor chance of finding buyers this day. A few of the best black Welsh and Scotch beasts only sold, and those at a reduced price from yestesday of at least 10s. per head. Cows in calf suffered a similar decline, a considerable number remaining unsold. Horses were also without a bid.

EARLSTOUN FAIR. — There was an unprecedentedly large show of cattle, principally for feeding and wintering, with a few fat kyloes and steers. A number of buyers being present, beasts forward in condition were readily disposed of, and at the close of the market the greater portion had changed owners. Year-olds brought from £5 to £7 10s. Good two years old ranged from £10 to £13, and such as were of a superior quality brought £14 and even £15 a head. Fat sold from 6s. to 6s. 6d. per stone, sinking offal. Cows, of which an average number was shown, brought from £8 to £12, and those fit for the Edinburgh market from £12 to £16. The horse market presented, as usual, a large show, the greater part of which was of an inferior description, and sales were dull.

EASTBOURNE SHEEP FAIR was well attended; and a considerable amount of business was transacted. Wethers sold for 37s.; ewes, 24s. to 32s.; ewe lambs, 13s. to 18s.; wether lambs, 16s. to 21s.

HEREFORD FAIR.—On Thursday last the number of prime cattle in offer was very large, and sales were brisk, at a trifling advance on the late value obtained at the neighbouring fairs; compared, however, with the values at this mart last year, there is a depression of nearly ten per cent. On Friday the number of cattle was not so large as we have seen on former years, owing to the great sales effected on Thursday. There were many inferior animals in offer. In the morning the sales for good fresh steers and barrens of good quality were very brisk, but they slackened as the morning advanced, and finally exchanges could not be made except at a reduction, owners being obliged to give way. Fat stock realized 6d. per lb. The number of sheep was large, but not nearly equal to the number of past years; values were rather depressed, especially for stores. Fat sheep realized 6¼d. per lb. Pigs were not numerous; stores were a drug. Bacon pigs were worth 5s. 6d., and porkers 6s. per stone of 12lbs. The horse fair exhibited the usual motley gathering; the business done was small. Draught horses for farming purposes were in demand. The butter and cheese market was well stored. Welsh butter went from 11s. to 12s. per stone of 12lbs. Cheese, best making, from 58s. to 65s. per cwt.; second quality, from 50s. to 55s. per cwt. HOP FAIR.—The value was depressed, indeed; the number of pockets pitched in the Old Town Hall was large, the prices varying from 45s. to 55s. per cwt., 55s. being obtained for very fine samples.

HORNBY FORTNIGHT FAIR.—The supply of fat cattle was small, compared with the previous one. Buyers were

numerous, and eager in making purchases. An early clearance was the consequence. The supply of sheep was large and fully 0¼d. per lb. was obtained in both sorts over our last quotations.

ILSLEY FAIR.—The supply of sheep was not large, and the attendance of dealers was small. Ewes were a dull sale, but lambs commanded more attention; taking the prices upon the whole, they did not differ very much from Weyhill. Some portion remained unsold.

KEADY FAIR was very large, owing to the harvest operations having been brought to an end, and many of the people in the locality making it a sort of gala day. There was a good show of horses of superior quality, but few exchanged owners, buyers being slow in offering a price. The cow fair was well attended, and good prices being freely given, there was a brisk business done. The demand for pigs was smart, especially for the English market. In sheep there was a great decline in price, and very few were sold.

KIRKHAM FAIR.—There was an average show of all kinds of stock, and in consequence of there being a fair attendance of buyers, animals in good condition were sold without difficulty. There was a little fat stock exhibited, but the description not being particularly good, it was disposed of according to the quality.

LUDGVAN FAIR was better supplied with cattle than on any former occasion. Fat cattle averaged about 50s. per cwt.; cows and calves sold well, and store cattle went off readily. The horse fair was, as usual, very large, and several animals changed hands.

MANSFIELD FAIR.—The show of horses was a poor one, and the supply of fat stock was much inferior, both in number and quality, to what we have seen. The number of lean stock was about an average one. The supply of game and poultry was great; for the latter the demand was brisk. The cheese market was pretty well supplied; good new cheese fetched from 50s. to 57s. per cwt.; blend milk, from 35s. to 47s. One or two dairies of prime cheese were retailed at 63s. per cwt., and a few others at 60s. At these prices there was a brisk demand.

MELROSE FAIR.—There was a good supply of lambs, &c., in the market, all of which were readily disposed of at a considerable advance upon the prices of Lammas fair. Cheviot ewe and wedder lambs brought from 9s. to 12s. Bred lambs from 15s. to 17s. Cheviot ewes and wedders brought from 17s. 6d. to 20s. 6d.

MICHELL FAIR.—There was a very large show of sheep, but very few were sold until after eleven o'clock, when a great number exchanged hands at lower prices than were demanded in the earlier part of the day. Best fat sheep brought about 5½d. per lb. Stores from 24s. to 38s. each. The sale for bullocks of all kinds was good, beef fetching from 48s. to 52s. Plough oxen and steers sold well at high prices. There were about 3,200 sheep penned, 3,000 of which were sold, and of fat bullocks about 200 exchanged hands.

MILNTHORPE FAIR.—There was only a slender muster of cattle, which met with ready sale at about the average price of neighbouring fairs. There was a large supply of sheep, but prices were on the decline, and very flat selling.

MUIR OF ORD, Oct. 18.—There was a large attendance of buyers. There was a large display of crosses and West Highland cattle; fewer sheep were brought forward than there were at last market. Good milch cows were scarce; and the show of horses was somewhat better than usual, although sorry enough on the average. The turn which the southern markets have lately taken occasioned a better feeling between buyers and sellers, and the improvement in prices of all kinds of stock estimated as from 5 to 6 per cent. better than at the September market at the Muir of Ord. Although things were generally pronounced stiffish, a considerable amount of business done, and droves of cattle and sheep left the field early in the afternoon, having changed hands. Two-year-old crosses sold from £8 to £12, one year old £5 to £7; two-year-old cross queys sold from £7 to £10, and one-year-old £5 to £7. £37 was offered and refused for a fine pair of plough oxen. Two-year-old West Highland stots sold from £5 to £6; but some small beasts of the same kind went at from £4 to £5. Six quarter-old Highlanders brought from £3 10s. to £4. A number of small and old Highland cows, for markets, were disposed of at from £4 to £5. Cheviot Wedders were worth from 18s. to 24s.; Cheviot ewes from 15s. to 18s.; black-faced wedders from 16s. to 20s.; black-faced ewes from 7s. to 12s. Small ponies brought from £7 to £8. Some old horses went at about £10. On the whole the first day's market was very successful.

NORWICH FAIR.—The show of Scots and shorthorns was both large and good, and the general quality excellent, although part of the different droves were not quite so full of condition as we have seen. The late bad market in Smithfield, and the low price of wheat, had a great effect, combined with the increased quantity of rain, in forcing the forward cattle off the marshes. The buyers were tolerably numerous, but extremely cautious; determined, if possible, in part, to make good their losses, in their purchases, at the sacrifice of the breeders, graziers, and dealers from the north, who are at all times willing to risk their capital for a small profit. Sales commenced very slow, and continued throughout the day, many farmers leaving the fair without a lot, although offered at a loss. The very top figure for the best Scots was 5s. 6d., the more general price 4s. 6d. to 5s. per stone of 14 lbs. when fat. The show of horses was small, and dealers few.

NORWICH FAIR.—(From our own correspondent.)—At our great and annual fair, on Tuesday last, the show of Scots and shorthorns was both large and good, and the general quality excellent; although part of the different droves were not quite so full of condition as we have seen. The late bad market in Smithfield, and the low price of wheat, had a great effect; combined with the increased quantity of rain, in forcing the forward cattle off the marshes. The buyers were tolerably numerous, but extremely cautious; determined, if possible in part, to make good their losses in their purchases at the sacrifice of the breeders, graziers, and dealers from the north, who are at all times willing to risk their capital for a small profit. Sales commenced very slow, and continued throughout the day; many farmers leaving the fair without a lot, although offered at a loss. It may be truly said, St. Faith's fair is nearly extinct, Norwich Hill being a fair every week. We would recommend our Norfolk friends to encourage this great fair, and every facility being afforded for room in drawing out cattle, which proves a great advantage to purchasers. We only hope the fair may finish more profitably than it has commenced. The very top figure for the very best Scots was 5s. 6d.; the more general price 4s. 6d. to 5s. per stone of 14lb., when fat. The show of horses was small, and dealers few.

OSMOTHERLEY FAIR.—Although the severity of the weather, accompanied with a heavy fall of snow, somewhat retarded the arrival of cattle, yet the show was equal, in quantity, to former years; buyers were more numerous than usual, and the various kinds of stock were readily sold. The best animal we noticed was a bullock, the property of Messrs. Poynter, of the Tontine, in Cleveland, and it reflected the greatest credit on the breeders. The arrival of all kinds of sheep was very large, compared with those shown on previous fairs; the show of tups, exhibited by Messrs. William Yeoman and Oswald and George Thompson, deserve the greatest praise, as every attention has been paid by them to rear a breed of a very superior kind; they were sold at very exorbitant prices.

OVERTON FAIR, Oct. 21, was very well filled with Down sheep, although not above half the quantity that were brought to the two last fairs held here. Sales were brisk, at enhanced prices, at from 1s. to 3s. per head over the prices given at Weyhill last Tuesday week. Best four and six tooth ewes, forward in lamb, sold at from 40s. to 45s. each; moderate ditto, 36s. to 38s. Ram lambs from 50s. to £5 each; fine tegs, 44s. Fine fat wethers, six tooth, 46s. each; rather smaller, 42s. to 44s.; four tooth ditto, 40s. to 42s.; fat ewes and second-rate half-breds, 36s. to 38s.

SETTLE FORTNIGHT FAIR was only thinly supplied with sheep, but any that were fat met with a ready sale. Beef rather limited, but prime qualities went off briskly, at good prices.

TIVERTON MARKET, Oct. 17.—There has been a very thin attendance of visitors to-day, and trade appeared very dull. The supply of fat bullocks was very small, on an average from 9s. to 9s. 6d. per score. Cows and calves, £7 10s. to £13 each. Sheep.—There was a tolerable supply, and very little business done. Wethers, 6d. per lb. Ewes, 5d. to 5½d.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF OCTOBER.

The weather has been variable during the month now about to terminate, but we have had favourable intervals for securing the little grain not previously carried; and though some patches may yet remain abroad in the very late districts, the entire quantity thus situated must be too unimportant to have much influence on the total produce of the kingdom. We consequently look upon the harvest as finished, and may venture on a more definite opinion respecting the result than we considered ourselves in a position to give last month. What we then stated, relative to the deficiency in the yield of wheat in all the southern and western parts of England, has since received confirmation; indeed, we question whether, in estimating the difference between last and this year's crop of wheat, in Essex and Kent, at eight to twelve bushels per acre, we have gone far enough, as the complaints from the farmers increase as thrashing is proceeded with. Neither is it in these counties alone that the result is so badly spoken of; the mischief done by the incessant rain in August having extended to all the earlier districts where cutting had been previously commenced, and as this was the case as far north as Yorkshire, the result could hardly be expected to be otherwise than unsatisfactory. To form any very accurate judgment of the real state of affairs is, in the absence of statistics on agricultural matters, by no means an easy task; but when we consider that the spring was unusually wet, the temperature during the greater part of the summer low, and that in July and August an immense quantity of rain fell, we have sufficient data, even if we had nothing further to guide us, for concluding that both in point of quality and quantity the crops must have suffered. Now that thrashing has commenced, we are, however, no longer dependent on such general rules, but have positive proof of the deficiency of the yield; whilst a very superficial examination of the samples brought forward at the markets in the agricultural districts suffices to prove the inferiority of the quality. According to the best authorities, the produce of wheat of Great Britain and Ireland, in good seasons, should be somewhere about 20 millions of quarters. We do not pretend to say whether this approaches correctness, but it will serve as a basis, or given point, for estimating the difference between an average crop and the result of this year's harvest. Taking that as the quantity of wheat required for the consumption of the kingdom for twelve months, our position may be readily defined.

The falling off in quarters to the acre varies greatly in different localities; but after a careful estimate of the accounts received from various districts, we are disposed to think that, taking one place with the other, the deficiency (allowing for inferiority in quality, and consequent deficiency in mealing properties,) will amount to fully fifteen per cent. This, on the total produce, would give a loss of 3,000,000 qrs., which, at first sight, certainly seems enormous. We must, however, recollect that the new crop was hardly commenced upon till about one month later than in ordinary seasons, and that, notwithstanding this extra call on old stocks, a large quantity of wheat of previous year's growth remains in the hands of the farmers on the 1st September. This is an undoubted fact; and, even at present, stocks of old wheat are more plentiful, in different parts of the country, than is usually the case at the corresponding period of the year. We had, besides, at the time of harvest, a good deal of wheat of foreign growth in the kingdom, and the arrivals from abroad have since been on a liberal scale; hence it may be questioned whether, with a deficiency of fifteen per cent. in the home crop, we might not manage to do very well without further importations. We cannot, therefore, discover any grounds to calculate on high prices; and we are inclined to repeat what we have stated on former occasions—viz., that there appears to be little reason to reckon on any advance on present rates.

In a few months the existing corn laws will cease; and as the harvest has generally turned out better on the continent than in this country, whilst the result in the United States and Canada is reported to have been very favourable, our farmers must make up their minds to extensive foreign competition.

The future prospects for the home producer are anything but encouraging; with so decidedly short a yield, present prices can scarcely be considered remunerating; and unless something is done to lessen the burdens on the land, and place our farmers in a better position to compete with the foreigner, the British agriculturist will be placed in a very awkward position.

The trade in wheat has, throughout the month, re-

mained in a quiet state, and the tendency of prices has been downwards, as well at the large consuming towns as at the farmers' markets; but we shall refer more particularly to the changes which have taken place, in a subsequent part of this article.

Though there can be no doubt that the potato disease has caused a loss of a very large proportion of that crop, the subject has excited much less interest lately than was the case a month or two ago. Whether this is caused by the comparatively good reports from the north (for it is certain that the disorder has been much less general in Scotland than with us), or whether it is found that the root keeps better than expected, we are not prepared to say; but certain it is that the excitement has entirely subsided, and rice and other articles suitable as substitutes for potatoes (which at one time rose rapidly in value) have lately fallen materially in price. There is, consequently, no reason to fear scarcity during the ensuing winter, and we think prices of provisions are more likely to range somewhat under than above what they usually are at that season of the year.

We have lately had very large supplies of cattle from Holland and Germany, and within the last few weeks a good many cargoes of potatoes have been received from Holland, France, and Flanders.

In the foregoing remarks we have said nothing relative to the result of the harvest, except in reference to wheat; and though other articles are of less public interest, it may nevertheless be as well to devote a small space to the consideration of the result of the spring crops.

Barley has disappointed the growers in almost all parts of the kingdom, and besides being short in yield, the quality is very much inferior to the produce of last year. Under these circumstances some advance in prices might reasonably have been expected; but the continued arrivals from abroad, and the generally dull tone of mercantile affairs, have not been without influence on the barley trade. We are, however, disposed to think that really fine malting qualities will hereafter become more valuable, as these will be less interfered with by foreign than other sorts.

The produce of oats is on the whole well spoken of, and in Ireland a larger quantity has been grown than for some years past; as, however, the consumption of oatmeal in that country is likely, owing to the potato disease, to be greater than usual, we doubt if in the first instance the shipments to England will be large; hence we do not calculate on much lower prices, on this side of the Channel, at present.

Beans and peas are not generally complained of; and having recently had liberal receipts of these articles from abroad, their value has receded.

Altogether the position of the grain trade has altered materially within the last two months, which we are inclined to attribute, firstly, to the splendid weather in September, and further to the importations from abroad having considerably exceeded general expectation.

At Mark Lane business has been particularly quiet since our last; and though the change in prices has not been very important, the movement has been gradually downwards. The quantity of English wheat brought forward has certainly not been so large as to warrant this state of things, and the reduction which prices have undergone has been wholly caused by the extent of the foreign supplies. The inferiority of the quality, and the very bad condition in which most of the English wheat has come to market, have also tended to increase the difficulty factors have experienced in making sales. Many parcels have proved altogether unfit for the use of millers, and to dispose of these it has been necessary to submit to such terms as the starch makers have been inclined to give. On Monday, the 2nd October, there was some appearance of firmness, and the best qualities exhibited on the Essex and Kent stands were placed at much the same terms as before; nor did any actual reduction occur on that day week; but on the 16th prices were quoted 2s. per qr. lower, and since then sellers have made some further concession. Quotations range very wide at present, some qualities of red being still worth 52s. to 53s., whilst the ordinary kinds are placed with difficulty at 40s. to 45s. per qr.

Contrary to what might have been expected, considering the bad order of the new English, the demand for foreign wheat has at no period of the month been active. This has, no doubt, been caused by our large millers having imported direct, and to the country buyers having found old wheat in their own neighbourhood. The comparatively trifling character of the demand, and the magnitude of the supplies from abroad, have obliged importers to warehouse, and the stock in granary at this port has increased considerably. Holders have on the whole remained firm, and the fall in prices has, considering that upwards of 100,000 qrs. have arrived here during the month, not been great. Until the 16th, quotations remained perfectly stationary, and the reduction since submitted to has not exceeded 1s. to 2s. per qr.; indeed, really fine qualities could scarcely be bought cheaper at present than when we last addressed our readers, there being still high mixed Danzig on the market worth 60s., and for a parcel of very superior Rostock a yet higher price has recently been offered and refused. These rates must not, however, be regarded as any criterion of the value of the common kinds; very good red

having of late been offered freely at from 48s. to 52s., and Danzig at from 50s. to 56s. per qr., duty paid. There has been very little doing in free on board cargoes, the terms asked by the agents for the foreign shippers being deemed too high. The duty remained at 4s. per qr. till the 26th, when the first step upwards occurred, and we may calculate on its soon advancing to 6s. or 7s. per qr. No official statement of the quantity of wheat entered at the 4s. duty has yet been published; but there is no doubt that allhere was cleared in for home consumption. Whether importers will pay 6s., or even 5s. per qr., when they are certain of being enabled to bring in their wheat free in the course of a few months, may, however, be questioned; and it is not unlikely that what may hereafter come to hand will be landed under lock, to wait the time of the cessation of the present law.

The top price of town made flour remained stationary at 50s. per sack until the 23rd inst., on which day a decline of 2s. took place, and secondary sorts have been offered relatively lower. A considerable quantity of French flour has been received, which has to a certain extent interfered with the sale of English, and our millers begin to complain of the competition. The best Paris whites at one time realized from 43s. to 44s., but latterly they have been offered 1s. to 2s. per sack lower; and the commoner sorts, from the northern ports of France, may now be bought at 38s. to 40s. per sack, which is about the same as Norfolk households have been selling at. From America the arrivals have not been of much consequence, only a few thousand barrels having as yet come to hand; the quality of these first shipments varies considerably: good useful brands of Western Canal have been held at 32s. per barrel.

The supply of barley of home growth into the port of London has been small, nor has this grain been brought forward very freely at any of the leading country markets. In the early part of the month the trade was very dull, and the tendency was rather downwards; the cold weather subsequently experienced had, however, the effect of causing the maltsters to buy more freely, but the demand was confined principally to the finer qualities, the common sorts having throughout been difficult of disposal. Picked samples have realized 35s. to 36s. per qr., showing a slight improvement on the top quotation at the end of September; whilst the ordinary sorts have, owing to continued foreign arrivals, rather receded than advanced in value. A parcel or two of thin Danish grinding barley have been sold at 24s. to 26s., and very fair qualities, though not fit for malting, might at present be bought at 27s. to 28s. per qr. The highest price we have heard of for foreign was 35s., which was paid for a lot of very fine Saale, equal in every respect to the best English.

The malting properties of this year's growth of barley are not well spoken of; and as the stocks of old malt have been reduced into a very narrow compass, the best descriptions have lately advanced about 2s. per qr. The trade in this article has, however, been rather slow, and only the very best descriptions have excited attention.

The supplies of oats, of home growth, have been very moderate; but this has not been felt, as we have had weekly arrivals from abroad fully equal to the consumption of the metropolis. The expectation generally entertained about the close of last month, that an advance in prices would occur, has therefore not been realized. Whether foreign supplies on so liberal a scale will continue to come forward may be questioned; but if the crop in Ireland has turned out so abundant as is believed, we may calculate on soon receiving considerable assistance from thence; and there does not appear much reason to reckon on much higher rates than those now current. Most of the new oats from the east coast hitherto received are of ordinary quality, but we have had some parcels from Scotland remarkably fine—these have met buyers at 28s. to 29s. per qr. The greater part of the foreign oats at present on the market are inferior; such as are sweet, and weigh 38 lb. to 40 lb. per bushel, may be quoted 20s. to 21s., and the best, of 42 lb. weight, 22s. to 23s. per qr. duty paid. The duty on oats is now 2s. per qr., having risen a step since our last.

The sale for beans has been decidedly slow, though we have now arrived at a period of the year when this article is generally used extensively for horse keep. The supplies, without having been particularly large, have been more than equal to the demand, and prices have consequently given way. New ticks have been sold at from 28s. to 32s., and very nice small beans, hard and in good condition, at from 33s. to 35s. per qr. French beans (old), something like our Ticks, have been offered at 30s., duty paid, without exciting much attention; and Egyptians at 26s. to 27s. per qr.

Having received good supplies of peas from the Baltic, and the arrivals coastwise having been tolerably extensive, white boilers have fallen fully 2s. per qr. The best English cannot now be quoted over 42s., and very good foreign may be had at 38s. to 40s. per qr. Hog peas have nearly maintained their previous value; indeed, prices of all kinds of pig food have been well supported.

The transactions in Indian Corn have not been extensive; but having very little on the spot, and the offers of floating cargoes having been comparatively few, sellers have shown no disposition to

lower their pretensions, and Galatz and other favourite sorts have not been offered below 38s. per qr., cost, freight, and insurance.

The continued dull advices from hence appear to have produced some effect on the corn trade on the continent, and according to the most recent accounts from the Baltic, prices of wheat had receded several shillings per qr. At Danzig quotations were for a time supported, owing to the smallness of the stock in warehouse, and the difficulty of getting supplies from the interior in consequence of the shallowness of the water in the river Vistula. By the last reports, however, we hear that some quantity had come down the river, and that sellers had begun to manifest anxiety to sell. Fine high mixed had been offered at 46s. to 49s., fine mixed at 45s., and common mixed at 41s. to 44s. per qr., without exciting much attention. The shipment to Great Britain had fallen off, and for at least a fortnight the exports had been light. Freights were not particularly high, but the insurance, as is usual at this period of the year, having risen materially, the cost of transport to this country is considerably enhanced.

At Konigsberg increased supplies appear to have been brought forward by the growers about the middle of the month; but the demand having been active, prices had been tolerably well supported. Wheat was, however, relatively cheaper there than at Danzig, and some buyers from the latter place had visited that port. High mixed qualities had commanded equal to 48s., mixed 45s., and red 43s. 6d. per qr. free on board. Freights were high.

At Rostock very little business had, we are informed, been done, owing to the almost total exhaustion of old stocks, and the trifling character of the deliveries from the farmers. The quality of the new wheat is described as inferior to that of last year's growth, few parcels weighing over 61lb., and the general runs barely 60 lb. per bushel. The few small lots that had come forward had met buyers at equal to 44s. to 45s. per qr. free on board.

At Stettin tolerable supplies of wheat and barley had, it seems, been brought to market; the former had been offered at from 44s. to 45s., and the latter at 21s. to 22s. per qr. free on board, without exciting much attention, few purchasers on British account having appeared.

At Hamburg a good many parcels of wheat were bought, about the middle of the month, for shipment to England, at from 46s. to 48s. per qr. for good to fine Upland. Subsequently the demand fell off, and by the latest report from thence business had become dull, and prices had receded fully 1s. per qr.

From the United States and Canada we learn that supplies from the interior to the sea-board had increased, and the export demand having fallen short of expectation, quotations had rather given way. Some quantity of flour had been shipped at rates which at the present value here will not pay; and a good deal of Indian Corn had been exported at prices varying from 65 cents to 70 cents, which promises a better return.

In the Dutch market the value of wheat approaches too nearly to its worth here to allow of business being transacted to any extent; and we are inclined to think that the recent fall in prices here will have the effect of checking shipments from France.

The accounts from the Mediterranean are not of much interest; at Leghorn, however, some rather large purchases of Polish Odessa and Marianople wheat had, we are informed, been made on British account, at 39s. to 41s. per qr. free on board, with a freight of 6s. and 10 per cent. At Marseilles 39s. 6d. per qr. had been paid for Polish Odessa wheat, and freight to England varied from 6s. to 6s. 6d. per qr., and 10 per cent. These purchases must, of course, be attended by loss if our prices do not rally.

CURRENCY PER IMPERIAL MEASURE.

	Shillings per Quarter. OLD.		NEW.	
WHEAT, Essex and Kent, white	54	to 61	46	to 56
Ditto, fine selected runs	—	—	57	59
Ditto, red	50	54	42	51
Ditto, extra	56	58	52	54
Ditto, Talavera	58	60	56	58
Norfolk, Lincolnshire and Yorkshire	46	53	—	—
Ditto, white	46	53	—	—
BARLEY, English, malting and distilling	—	—	30	33
Ditto, Chevalier	—	—	33	35
Ditto, grinding	—	—	28	30
MALT .. Essex, Norfolk and Suffolk	—	—	60	62
Kingston, Ware, and town made	—	—	62	64
OATS, Essex and Suffolk	—	—	20	22
Lincolnshire and Yorkshire (Polands)	—	—	21	24
Ditto, feed	—	—	19	22
Devon & West Country, feed or ack	—	—	18	19
Northumberland and Scotch, feed	—	—	23	26
Dundalk, Newry, and Belfast, potato	—	—	23	25
Limerick, Sligo, and Westport, potato	—	—	21	23
Ditto, feed	—	—	20	23
Cork, Waterford, Dublin, Youghal, and Clonmel, black	—	—	17	22
Ditto, white	—	—	19	22
Galway	—	—	15	19
RYE	—	—	30	32
FLOUR, best marks (per sack of 280 lbs.)	—	—	45	50
Norfolk and Suffolk, ex-ship	—	—	38	42
BEANS, Mazagan	33	35	—	—
Tick	28	32	—	—
Harrow	32	38	—	—
Pigeon, Heligland	37	39	—	—
Windsor	30	40	—	—
Long pod	28	30	—	—
PEAS, non-boilers	35	38	—	—
White, Essex, and Kent, boilers	38	40	38	40
Ditto, fine Suffolk	40	42	40	42
Maple	38	40	38	40
Hog and grey	38	39	38	39
TARES, winter, per bushel	10s. 0d. to 11s. 3d.			
RYE MEAL (per ton)	£7 10s. to £8 0s.			

Cakes, Linseed, English, per 1,000	£12 0s. to £12 15s.
Ditto, foreign, per ton	£8 10s. to £10 10s.
Rapeseed	£4 15s. to £5

FOREIGN GRAIN.

	Shillings per Quarter. FREE.		IN BOND.	
Wheat, American	48	to 54	—	to —
Canada	42	49	—	—
Dantzic and Konigsberg	50	54	—	—
Dantzic, fine white, extra quality	54	60	—	—
Stettin and Hamburgh	50	54	—	—
Danish	48	52	—	—
Rostock, Pomeranian and Rhine	52	58	—	—
Mediterranean, Odessa, & St. Petersb.	52	54	—	—
Black Sea (nominal) hard to soft	39	44	—	—
Spanish	52	56	—	—
Buck or Brank	29	30	—	—
Maize, white	36	38	—	—
Ditto, yellow	37	40	—	—
Peas, white boilers	38	40	—	—
Yellow ditto	38	40	—	—
Non-boilers	33	36	—	—
Barley, malting	30	33	—	—
Grinding and distilling	24	30	—	—
Hamburgh, Dantzic, Konigsb., & Riga	27	30	—	—
Danish, Mecklenberg, and Pomeranian	25	30	—	—
Beans	34	36	—	—
Small	35	38	—	—
Egyptian	26	27	—	—
Oats, Dutch, brew, and Poland, Friesland, and Groningen	22	25	—	—
Danish and Swedish	19	22	—	—
Russian	19	22	—	—
Flour, American, sweet	28	32	—	—
Ditto, sour	26	28	—	—
Canadian, sweet	28	31	—	—
Ditto, sour	25	27	—	—
Dantzic and Silesia, extra superfine	27	31	—	—
Tares	30	35	—	—
Indian Corn	38	40	—	—
Indian Corn Meal (per brl. of 196 lbs.)	16s. 6d. to 17s			

IMPERIAL AVERAGES.

For the last Six Weeks.

Week Ending:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.	Rye. s.	d.	Beans. s.	d.	Peas s.	d.
Sept. 9, 1848..	56	10	33	4	22	10	33	8	39	1	41	6
Sept. 16, 1848..	53	8	33	3	22	2	33	5	38	10	40	2
Sept. 23, 1848..	52	4	33	7	21	11	32	0	37	11	37	11
Sept. 30, 1848..	52	9	33	3	21	1	31	9	36	1	39	8
Oct. 7, 1848..	52	5	32	6	20	8	32	1	35	3	38	0
Oct. 17, 1848..	51	11	32	0	20	8	30	4	35	2	39	2
Aggregate Average of the six weeks which regulates duty	53	4	33	0	21	7	32	3	37	1	39	5
Comparative Average same time last year	53	3	32	3	23	1	33	6	44	10	43	9
Duties	4	0	2	0	2	0	2	0	2	0	2	0

PRICES OF SEEDS.

BRITISH SEEDS.

Cloverseed, red 30s. to 35s.; fine, 35s. to 36s.; white, 30s. to 40s.
Cow Grass (nominal) —s. to —s.
Linseed (per qr.).. sowing 56s. to 60s.; crushing 42s. to 48s.
Linseed Cakes (per 1,000 of 3 lbs. each) £11 10s. to £12 10s.
Trefoil (per cwt.) 15s. to 21s.
Rapeseed, new (per last) £27 to £30
Ditto Cake (per ton) £4 15s. to £5
Mustard (per bushel) white .. 8s. to 11s.; brown, (nominal.)
Turnip, white (per bush.) —s. to —s.; do. Swedish, —s. to —s.
Coriander (per cwt.) 18s. to 25s.
Canary (per qr.) 80s. to 85s.; fine, 85s. to 95s.
Tares, Winter, per bush. 10s. 6d. to 10s. 6d.
Carraway (per cwt.) 28s. to 29s.; new, 31s. to 32s.
Rye Grass (per qr.) 17s. to 38s.

FOREIGN SEEDS, &c.

Clover, red (duty 5s. per cwt.) per cwt. 28s. to 35s.
Ditto, white (duty 5s. per cwt.) per cwt. 22s. to 45s.
Linseed (per qr.) .. Baltic 42s. to 46s.; Odessa, 42s. to 46s.
Linseed Cake (per ton) £8 10s. to £10 10s.
Rape Cake (per ton) £4 15s. 5d.
Coriander (per cwt) 16s. to 20s.
Hempseed, small, (per qr.) 45s. to 48s., Do. Dutch, 45s. to 47s.
Tares, (per qr.) 32s. to 38s

POTATO MARKET.

SOUTHWARK WATERSIDE, Oct. 23.

The very wet weather the last three weeks has done considerable injury to the potato crop in Yorkshire and Scotland, and has also prevented shipping to any extent for the London markets; the arrivals from the Continent are extensive, being upwards of 1,500 tons since our last report, all of which have met a ready sale. The following are this day's prices:—

Yorkshire Regents	100s. to 140s
Wisbeach ditto	100s. to 110s.
Scotch ditto	100s. to 120s.
Ditto Reds	70s. to 90s.
French Whites	85s. to 95s.
Belgian ditto	80s. to 90s.

HOP MARKET.

BOROUGH, Monday, Oct. 23.

We continue to have an active inquiry for the finer descriptions of Hops, at a small improvement upon last week's currency. Inferior qualities (comprising a large proportion of the growth) are heavy, at barely the rates of this day week.

Sussex Pockets.... 44s., 58s., to 60s.
Weald of Kents.... 48s., 56s., to 70s.
Mid. and East Kents 56s., 100s., to 112s.

Horton and Hart.

WOOL MARKETS.

BRITISH WOOL.

LEEDS, Oct. 20.—The present has been a flat week as to sales of combing Wool. Prices are stationary. In clothing sorts we do not quote any alteration.

LIVERPOOL, Oct. 21.

Scotch.—There is now a good selection of Laid Highland Wool; but the trade having generally a present supply, the demand is less active at late rates. White Highland is also less inquired for. There is a fair demand for good Crossed or Cheviot, the inferior and bad conditioned is again quite neglected.

		s.	d.		s.	d.
Laid Highland Wool, per 24 lbs		5	3	to	6	3
White Highland	do	7	6		8	0
Laid Crossed	do .. unwashed	7	6		8	6
Do.	do... washed	8	0		9	6
Do. Cheviot	do... unwashed	8	0		10	6
Do.	do... washed	12	0		15	0
White do.	do	16	0		17	0

FOREIGN WOOL.

The market for Wool is dull, and prices are not well supported. The accounts from the manufacturing districts are unfavourable.

LEEDS, Oct. 20.—There have been some few inquiries for the lower qualities of colonial Wools during the past week, but on the whole the demand continues very languid.

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.

THE FARMER'S MAGAZINE.

DECEMBER, 1848.

No. 6.—Vol. XVIII.] [Second Series.

PLATE I.

A PEN OF SOUTHDOWN SHEEP.

As an embellishment our first plate has not been exceeded in excellence by any which have preceded it, nor is the subject itself less interesting. Without making any invidious comparison with other breeds, it must be admitted, that from their adaptation to our poorer and more exposed lands, and from the excellence of their flesh, the Southdown sheep is unrivalled. The animals here pourtrayed require no comment from us, they speak for themselves: they possess, however, an additional interest from their noble breeder and feeder. We are not of the number of those persons who are wont to exclaim, "How can tenant-farmers compete with my Lord? *he* can afford to spend money to get up animals which we cannot." As there is no royal road to learning, neither is there, as we believe, any golden road to breeding: it would be unfortunate if it were so in either case. His Grace the Duke of Richmond has fought his way to excellence: he has been beaten many times, but he has every now and then made an advance, and maintained his position, until at length he has reached the highest point. Over and over again we have heard him express his determination to persevere until he obtained the highest prize—the gold medal: he has succeeded. This pen of sheep obtained the first prize in their class, and the gold medal, as the best pen of short-woolled sheep. The Smithfield Club has no higher prize to bestow. It must be borne in mind, that his Grace is not only the feeder, but the breeder of these sheep: there is credit due to the feeder, but there is much more due to him who rears the animal of the proper form ready to the hand of the feeder. His Grace has frequently been compelled to stand second to the tenant-farmer. Messrs. Webb, Ellman, and Grantham have carried away the prize from him. Let no one after that say that "tenant-farmers cannot compete with my Lord." But "my Lord" has followed their example, and has beaten them by studying in their own school, by infusing their blood into his flock, and by pursuing the same course which enabled them to obtain the high reputation they enjoy as breeders of Southdowns. We hold that the public at large is deeply indebted to individuals standing in the high position of his Grace, who devote a portion of their time and their wealth to the improvement of the means by which the amount of food necessary for the demands of the population may be obtained, and in procuring which, whether meat or bread, the sheep performs such a prominent part.

PLATE II.

CYMBA; Winner of the Oaks, 1848.

NOW THE PROPERTY OF SIR J. B. MILL, BART.

PEDIGREE.

Cymba, bred by Mr. H. S. Thompson, in 1845, is by Melbourne, out of Skiff, by Sheet Anchor; her dam Tertia, by Emilius, out of Miss Wentworth, by Cervantes.

Melbourne, bred by Mr. Robinson, in 1834, and got by Humphrey Clinker, out of a Cervantes mare, is also the sire of Sir Tatton Sykes, the winner of the St. Leger in 1846. A very good opening of great winners, considering this is only the third year his stock have been out.

Skiff, bred by Mr. Cookes, in 1838, never appeared but once on the turf, when she ran fourth and last for a Welter Stake at York Union Hunt. She was put to the stud the same year (1842), but produced nothing of any note previous to throwing the Oaks winner.

Cymba is a brown mare, standing fifteen hands three inches high. She has a long plain head, with the ears set on wide; a very clean though rather straight neck; excellent oblique shoulders, good arms, and fine depth of girth and brisket. She has a good back, but is a little tucked up in the back ribs; has meanish straight quarters, and runs very light in the bone—training down, in fact, to a very wiry, but not by any means a handsome animal. To this catalogue of contents, we may add that Cymba has a star on the forehead, continuing in a faint line to the nose, a very good quiet temper, and a very fair share of fortune's favours, if not of nature's gifts.

SUMMARY OF CYMBA'S PERFORMANCES.

In 1848 she started five times, and won three times:—The Oaks Stakes at Epsom, value clear £4,200; the Queen's Plate at Winchester, £100; the City Members' Plate at Salisbury, £70; total, £4,370.

PLATE III.

SHORT-HORNED COW.

(This plate, but for unforeseen circumstances, would have appeared last month.)

The subject of this plate is a short-horned cow, HOPE, roan, calved May 9th, 1843; bred by and the property of Mr. Richard Booth, of Warlaby, near Northallerton, Yorkshire.

Hope was got by Leonard (4210); d. Faith, by Raspberry (4875); g. d. Farewell, by Young Matchem (4422); gr. g. d. Flora, by Isaac (1129); gr. gr. g. d. by Young Pilot (497); gr. gr. gr. g. d. by Pilot (496); gr. gr. gr. gr. g. d. by Julius Cæsar (1143).

At the eighth annual meeting of the Yorkshire Agricultural Society, held at Beverley, in August, 1845, she obtained the first prize of £10, as the best two-year-old heifer in calf.

At the Royal Agricultural Society's meeting, at Newcastle-upon-Tyne, in July, 1846, she obtained the prize of £15, having eighteen competitors, as the best cow in milk or in calf, she being then but 3 years 2 months and 8 days old.

At the ninth annual meeting of the Yorkshire Agricultural Society, held at Wakefield, in August, 1846, she obtained the prize for the best three-year-old cow in calf or milk, and having had a calf.

At the next meeting of the same society, held at Scarboro', in August 1847, she obtained the prize of £20, as the best cow of any age in calf or milk.

At the Durham Agricultural Society's meeting, held in September, 1847, at Barnard Castle, she also obtained the prize as the best cow of any age in calf or milk.

At the Royal Agricultural Society's meeting, at York, last July, she obtained the local prize in Class 3, as the best short-horned cow above three years old in milk.

The name of Booth is so well known by all short-horned breeders, that it would be a work of supererogation for us to enlarge upon the merit of the animals bred by the Messrs. Booth. The prize lists of the Royal Agricultural Society, the Yorkshire, and other Societies, furnish the best evidence of the superiority of their stock. The animal which forms the subject of this plate is, we believe, considered to be one of the best, if not the best, cow in England.

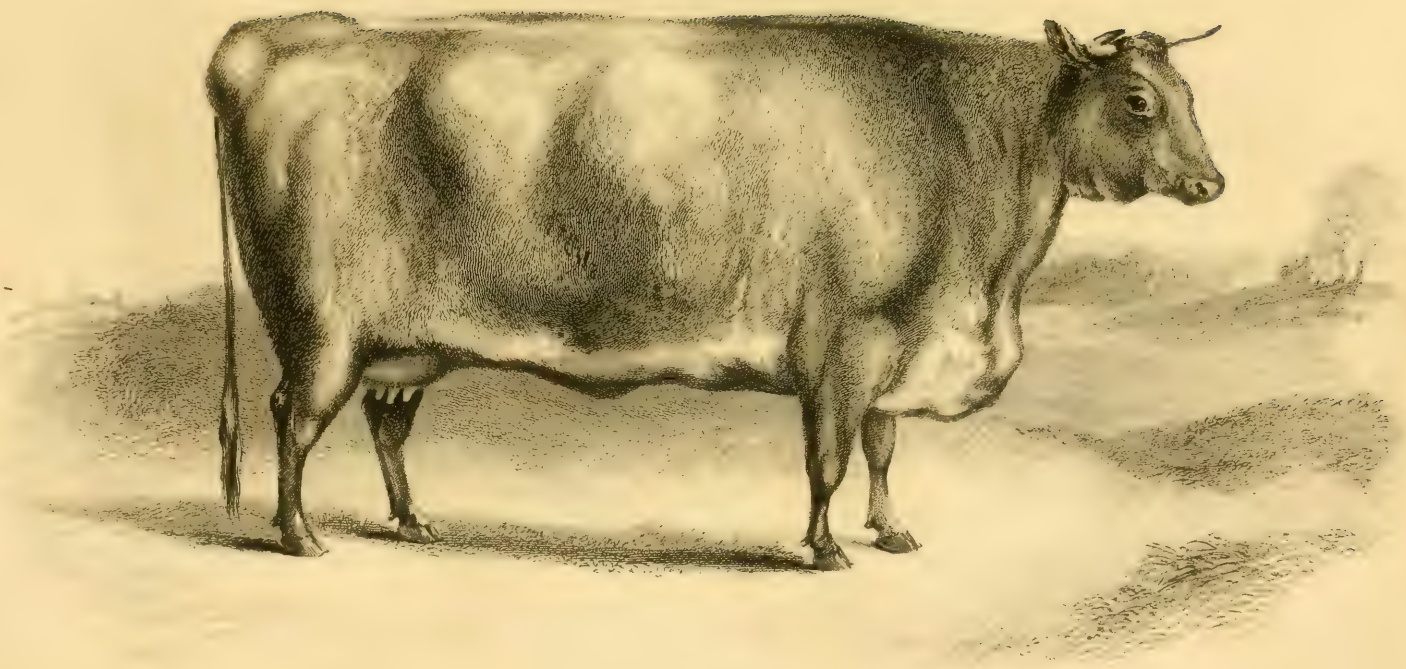
ON THE SOURCES OF THE ALKALIES IN AGRICULTURE:

BEING IN PART A REPLY TO "REMARKS ON LAWES'S PAPER ON AGRICULTURAL CHEMISTRY—TURNIPS; BY A FARMER."

BY J. B. LAWES.

In the last number of this magazine there appeared an article headed, "Remarks on Lawes's Paper on Agricultural Chemistry—Turnips; *by a Farmer*:" and bearing no other signature than "T. L. C." Both before and since its publication it has been abundantly advertised as "A Refutation of the Doctrine laid down by Mr. Lawes in his article on Agricultural Chemistry, published in the *Journal of the Royal Agricultural Society of England*," and as "IMPORTANT TO THE AGRICULTURAL INTEREST:" it seems but due, therefore, to the public, to so highly respectable a journal as the *Farmer's Magazine*, and to ourselves, that some notice should be taken of it: though under other auspices an anonymous attack, possessing the qualities which we shall expose to view, might best have been allowed to pass.

None, who have already read our paper, can fail at once to discover the general character of the charges brought against it, in the article referred to; yet we believe few will be prepared to suspect the uniform and shameless avoidance of all the decen-



cies of honest criticism, which a close examination brings to light. We presume, indeed, that it can only be for such as are not likely to have read our paper that our critic has carefully laid his snares; nicely calculating upon how much and how little chemical information and previous acquaintance with the subject he might expect to be arrayed in the mind of the reader against misrepresentation and specious argument. In answer to these, of which the entire attack consists, it would be sufficient to request attention to the paper that is complained of; but we are inclined to take advantage of the opportunity afforded by a more direct reply, to bring before the reader, by quotation or otherwise, some of the important conclusions to which our investigation has led, apart from the vast amount of figures and detailed discussion with which they are necessarily mixed up in the original. This course will, we think, besides affording some amusement to the reader, and attaining a complete contradiction of the charges brought against us, serve to convey some useful information; and at the same time, by the exposure of picking and deception, tend to awaken in the mind of the farmer a salutary mistrust of the statements of unknown, and therefore irresponsible advisers.

The "Remarks" are prefaced thus:—"Though there are few subjects connected with agricultural chemistry which can be considered as completely settled, yet, thanks to the labours of the scientific men of the present day, there are now some points in this important field of research, which are so far brought out of the gloom which surrounded them no further back than the days of our fathers, that we see some hope of outliving the difficulties at present surrounding us. In this transition state of affairs, any incorrect deductions from agricultural experiments are very much to be deprecated; as they may, by giving a wrong direction to research, materially tend to prevent the perfect explanation of the varied phenomena of nature."

From this paragraph one would assume that the writer was not unacquainted with the nature and progress of agricultural research; and that he claimed to be imbued with a sincere desire for the welfare of the "farmer," and for the advancement of TRUTH. A little examination into the spirit and character of his remarks, as he proceeds, will perhaps constitute the reader his own judge of his pretensions to confidence.

We propose, first, to direct attention to the *means* of refutation resorted to, and afterwards to discuss the real merits of the question which (the author wishes it to be understood) it is the chief object of our paper to settle—namely, that of the necessity of the provision of alkalies for the turnip crop by means of *manufactured* manures; for this, we presume, is really the point at issue between us.

After informing the public that he had never before met with a paper more deserving of censure, on account of the incorrect deductions sought to be drawn from the experiments, and warning them of the inconsistency of the recommendations that are laid down with generally received opinions, he says that "the deductions are: 1st, That superphosphate of lime is a certain and unfailing manure; and 2nd, That though the turnip crop exhaust the land of alkalies, the superphosphate of lime enables the turnip to do without them;" and then insinuates that these conclusions are forced to serve a base and mercenary end. For he adds—"In plain English, the farmer has only to purchase plenty of superphosphate of lime of the manufacturer, to ensure permanently good turnip-crops; so that we have here a very important agricultural question completely set at rest, apparently to Mr. Lawes's extreme satisfaction."

Notwithstanding these assertions, we find at the conclusion of the attacks a sentence acknowledging that rape-cake is recommended as a good manure for turnips; yet, as if emphatically to insist upon the truth of previous statements, it at the same time declares that such recommendation is in direct contradiction to the deductions elicited during the discussion of the results! The sentence is thus worded:—"As if to crown the whole matter, and to disprove all that had been previously asserted, Mr. Lawes himself admits that the first application of a mineral phosphate is liable to produce heavier crops than those which follow; and attributes this falling off to the exhaustion of the organic matter of the soil, and recommends rape-cake as a remedy."

From these remarks and quotations, we think any one receiving the statements of our critic would gather that in the paper referred to it was our wish to set aside the well-established practices of agriculture, and to urge that superphosphate of lime might be exclusively relied upon for the turnip-crop. Of the fairness, or even the decent proximity to truth of these statements, the reader can judge from the following sentences, which occur in our paper in the course of the discussion of the results.

We find at page 509 (*Journal of the Royal Agricultural Society of England*, vol. viii. part 2): "Of the substances which we may term pure constituents, *organic matters*, and especially such as abound in carbon, must be supplied for the production of agricultural crops of turnip-bulbs."

Page 511: ...."yet the admixture of mineral manures with the organic gives the best result in the series, so far as development is concerned....That the cause of the depreciation in average weight of

bulbs during this season was, nevertheless, connected with a deficiency of matter for organic formations, and not of mineral supply, the following extracted results will show."

Page 514: "This can only be attributed to deficiency in some essential agency or supply, apart from those of season alone; and since those substances in this season, in which mineral supply is most liberal, show by the number of plants a degree of healthy condition, and yet an inferior rate of growth, we conclude *that the soil was exhausted of matter for organic formations.* That the defect is carbonaceous, rather than nitrogenous, is learnt from a careful comparison of the effects of rape-cake and of ammoniacal salts."

Pages 522-3: "In this same season, on the other hand, the farm-yard dung gives the largest acreage produce obtained throughout the entire series of seasons and experiments, a weight of bulb higher than any other manure in the same season, and a number of plants nearly identical with that under mineral manures only. Again, by mineral supply alone—to which indeed, as we have seen, may be attributed an influence upon the growth of the plant, apart from that which can be traceable to this mere provision of crop material—we have as many tons of produce as the unmanured gives cwts., a weight of bulb more than ten times as great, and a number of healthy plants nearly double. *By the side of the farm-yard dung, however, which we presume to contain a sufficiency of all the constituents of a large crop of turnips* (though, excepting under the influence of a continuity of rain and a relatively low temperature, not calculated to develop the most healthy conditions of growth) *we find that the purely mineral manuring, with a number of plants per acre almost identical, shows a formation of bulb, within an equal period of time, little more than two-thirds as great.*"

Pages 524-5: "A comparison of the results of the one year with those of the other, as given above, sufficiently prove, then, the essential influence of climatic agency for the development of the turnip-bulb in *full agricultural* quantity; but the great defect in formation of bulb within a given time, under the influence of one and the same season, when a full supply of mineral manure only is provided, as compared with that of *organic matter,* also again teaches *how imperative it is that there be a liberal provision of such matter in the soil, if we would produce the largest crop which the characters of the season admit of.*"

Page 529: "It is clear, then, that carbonaceous manures aid the development of turnip-bulb."

Page 530: "Resuming the question in discussion, we see that whilst ammoniacal salts in no degree restored fertility to this exhausted soil, rape-cake gave a six-fold development....It has been seen that a liberal supply of available phosphates, and of organic manures abounding in carbonaceous matter, are pre-eminently favourable to the desired habit of the plant; and that nitrogenous supply, so essential to the increased growth of *corn,* is so here only to a limited extent."

Page 532: "So far as supply of constituents is concerned, we could select from the series of experiments several instances where we may reasonably suppose that every constituent, excepting carbon, existed more fully in quantity, and more favourably in combination, than in the dung; yet, with its larger *carbonaceous supply to the root,* we get the largest crop of bulb in the series."

Page 544: "As a general inference from our results, we may state that the mineral and carbonaceous manures which we have before seen to favour bulb formation, &c."

Page 560: "They (the experiments) show distinctly *that the production of turnip-bulb depends upon the supply of carbonaceous matter in the soil, and that the true office of the turnip and other root crops consists in connecting the otherwise useless refuse of corn crops (straw) into succulent and nourishing food for animals.* During the five years over which our turnip experiments have been carried, in only one instance has the acreage weight of bulb reached 17 tons. We know that the mineral matter required by the turnip has not been deficient, and in many instances very large quantities of nitrogen have been supplied; but the essential substance, carbonaceous matter, required for bulb formation has been but moderately supplied in the form of rape cake: *in one instance where it was supplied in a larger quantity by dung, the greatest produce was obtained.* Having, therefore, shown that to obtain heavy crops of bulbs large amounts of carbonaceous matters should be supplied to the soil, and that *dung is the cheapest source of this substance,* the question next arises—What are the substitutes for it? Dung is an article in which our farm-yards are very apt to be deficient."

Page 562: "*It must, however, be clearly understood that the bulk of an agricultural crop of turnips depends materially upon the amount of organic matter contained in the soil, without which the development of the power of growth, by means of the phosphate, will be unavailing.....* Rapecake, as containing a large amount of organic matter, is an admirable manure for the turnip, as a substitute for farm-yard dung."

Page 565: ...."*for it is useless to place a large amount of dung in the soil, to be converted into the substance of the turnip,* unless the free action of the air is provided at the same time, by which alone the decomposition of the dung can be effected."

In the face of the facts of the case, as shown by these quotations, the recklessness and the audacity of the representations, which would give it to be understood that the conclusions and recommendations laid down in our paper are "contrary to the generally received opinions"; and that the main result brought out in it is, that "ONLY" superphosphate of lime was required "*to ensure permanently good turnip crops,*" is so palpable and glaring, that we are utterly at a loss to comprehend the state of mind which could lead the advocate of a cause, apparently so dear to him, to commit the imprudence of thus gratuitously proclaiming the sort of credit which is due to his statements.

Continuing the exposition of the spirit of the "*Refutation,*" and of the expedients resorted to for its establishment, we would specially observe that, for this purpose, there are *two*, and *only two*, selections made from the statements of the experiments, as the foundation of what it is intended should be taken as argument.

Each of these *foundations of refutation* (?) deserves a word or two of comment. The first selection is stated to be taken from page 527, and is as under:—

Plot 21.—400 lbs of sulphuric acid and 400 lbs. of bone-dust.

Plot 15.—400 lbs. of bone-dust, 420 lbs. of sulphuric acid, and 315 lbs. of soda-ash.

Plot 16.—400 lbs. of bone-dust, 420 lbs. of sulphuric acid, and 220 lbs. of magnesian limestone.

Plot 17.—420 lbs. of bone-dust, 420 lbs. of sulphuric acid, and 470 lbs. of pearl-ash.

Plot 18.—400 lbs. of bone-dust, 105 lbs. of soda-ash, 74 lbs. of magnesian limestone, and 157 lbs. of pearl-ash."

The writer proceeds to say: "For the results of these experiments, and most elaborate and laborious tables founded thereon, we refer to the original. Upon the experiments themselves, we remark, in the first place, that it is somewhat strange that Mr. Lawes should have arranged such a series of experiments to ascertain the value of *alkaline* manures, when he must (or ought to) know that they contain no alkaline substances whatever, except No. 18; and mark the difference! they are then tried, not with superphosphate of lime, but simply bones. This distinction is an important one, and will be again referred to." It *is* again referred to, thus: "Respecting experiment No. 18, which consists of bones, soda, &c., it was not to be expected that bones in the unprepared state would prove so valuable as the superphosphate of lime of No. 21; so that there is no honest ground for comparison. And as in No. 18 the bones are jumbled up with the alkalies, nothing is decided, except that the mixture is bad; though this does not justify us in drawing conclusions respecting the individual parts of the mixture."

Now, it so happens that the statement of the manures of this *plot* 18 occurs *nine times* in the course of our paper—namely, at pages 517, 518, 519, 520, 521, 529, 540, 545, and 527. On reference to these pages, it will be seen that, in *eight cases out of the nine*, the manure of No. 18 is stated to be compounded of calcined bone-dust and sulphuric acid (or superphosphate of lime) and alkalies, and not of, simply, bones and alkalies; whilst once only—namely at page 527, from which our critic professes to quote—the sulphuric acid is omitted! a mere oversight, which we think is more to be regretted than wondered at, considering the vast amount of tabulation occurring in our paper.

The most lenient interpretation which can be assigned to the selection and the adoption, as the true one, of the *only erroneous statement out of nine*, is, that they betray an exceedingly careless and superficial examination—a sin light indeed, compared with some alternatives, yet scarcely pardonable in one who volunteers to become scrutineer for his friends, in a matter said to be important to their interests, and to save them from the errors into which others might lead them!

But let us point out another fact bearing upon this "*No.* 18," by which the judgment of the reader, which we will suppose to be still wavering, perhaps becomes more settled. The *second selection* is said to be taken from page 517, and No. 18 is again represented as containing *no sulphuric acid*; though, on reference to the original, at page 517, it will be found that it is there stated, that 420 lbs. of sulphuric acid were employed in the manure; and, as will presently be seen, the attention of our critic was specially paid to the statement of manures at this page! The object of the *second selection* (in which one significant error has just been pointed out) is to depreciate the value of superphosphate of lime, and to show, by calculations of cost per ton of turnips, that even our experiments (which have been said to be so arranged as not to provide "information respecting alkaline manures") exhibit the benefit to the farmer of the use of alkalies as a manure for turnips.

The selection stands thus:—

	Ton.	cwt.	qr.	lbs.
No. 15. 400 lbs. of bone dust, 420 lbs. of sulphuric acid and 315 lbs. of soda ash, produce . . .	11	15	3	12
No. 16. 400 lbs. of bone dust, 420 lbs. of sulphuric acid, and 220 lbs. of magnesian limestone produce	12	1	0	0

	Ton	cwt	qr.	lbs.
No. 17. 400lbs. of bone dust, 420lbs. of sulphuric acid, and 470 of pearlash produce	10	19	0	6
No. 18. 400lbs. of bone dust, 105lbs. of soda ash, 74 lbs. of magnesian limestone, and 157lbs. of pearlash produce . . .	12	12	2	8
No. 22. 1,232 lbs. of superphosphate produce	12	13	3	12

It will be seen that the same numbers are here taken as before, with the exception that we have now *No. 22 instead of No.* 21, though in no case had we assumed that No. 22 was comparable with the No. now associated with it; whilst our critic has on the very same page stated in italics that No. 21 was that with which they are all compared!—the truth, which, but for consistency, for once might have been allowed to stand; he now tells us, however, that No. 22 was that "*with which they were all compared*"! a statement for which we have vainly sought some honest meaning.

But No. 22, as compared with No. 21, contained an extravagant amount of superphosphate of lime; the design of the experiment being to show that, beyond the point of equivalent supply in the soil of other matters, superphosphate of lime was unavailing; and it perfectly answered its purpose.

The design in bringing it, instead of No. 21, by the side of the other numbers is clear enough, after consideration of the tables which are concocted by its aid, and of the remarks appended to them. The first is as under:—

	Ton.	cwt.
No. 22, from 240 lbs. of phosphoric acid, produced	12	13
No. 15, from 150 lbs. of phosphoric acid, produced	11	15
No. 16, from 150 lbs. of phosphoric acid, produced	12	1
No. 17, from 150 lbs. of phosphoric acid, produced	10	19
No. 18, from 150 lbs. of phosphoric acid, produced	12	12

And the remarks are showing that *No. 22, with which they were all compared* (*!*) contained not less than 90 lbs. of phosphoric acid more than any of the others.

This extra phosphoric acid is sufficient *for about 45 tons of turnips;* and even when presented in the most favourable form as superphosphate, it only produces 1 cwt. *more than No. 18 where it was insoluble, and the alkalies had been added;* and about half a ton more than No. 16, where magnesia had been added. The soda gives a deficiency of 18 cwt., and the potash 1 ton 14 cwt.? We need only to remark, that all the argument respecting No. 18 is, for reasons explained above, quite inapplicable, and that if we bring No. 21, with which they *do* all compare, in the place of No. 22, we shall find that No. 21, from 150 lbs. of phosphoric acid (the same amount as in all the other cases), produced 13 tons 2 cwt., or 9 cwt. more than the 240 lbs. of phosphoric acid of No. 22; a fact accounted for by the relative condition of exhaustion of other matters of the two plots.

The next table is brought forward "to test the whole of the cost of the applications."

The ignorance, or wilful misguidance, which has instigated the putting of the question in this attractive light before the farmer—whichever it be—is equally despicable in such as presume to be his monitor. One would have thought that no one, unless the subject were purposely mystified for him, could have imagined that the consideration of cost was in any respect applicable to experiments of the kind referred to.

Pray, does he, who seeks after a new process of chemical manufacture, sit down and estimate the cost of the manufactured article from that of the pure re-agents, the glass and platinum vessels, the length of time, and the amount of labour bestowed upon his initiative experiments?—or does he not rather, after satisfying himself of the chemical facts of the process as such, consider the cost when the available crude materials are had recourse to, brick and mortar and iron, supply the place of glass and platinum, and a comparatively small amount of time and labour is expended? In several places in our paper, the reader was reminded of the nature of the questions at issue, and specially cautioned against imitating the object and province of the experiments. One quotation will alone suffice to shew that no attentive and candid reader need fall into error on this point. It is from page 560: "It should therefore be distinctly understood, that the objects of these experiments is not to provide any examples for direct imitation in practice, but to enable us to ascertain the real character of season, soil, and manuring required for the growth of the turnip; in order that, the principles of its culture being better understood, the practice of it may be more economically carried out." But to return to the illustration and argument of our critic. His table is as follows:—

		Tns.	cwt.	£.	s.	d.	
No. 15	produces	11	15	at 3	5	0=	5s. per ton.
16	,,	12	1	1	17	0=	3s. ,,
17	,,	10	19	7	15	0=	14s. ,,
18	,,	12	12	3	2	0=	5s. ,,
22	,,	12	13	3	17	0=	6s. ,,

The remarks are—"This calculation gives quite a different view of the whole matter. It is evident, from No. 16, that the addition of 220 lbs. of magnesian limestone enables the farmer *to produce his turnips at 3s. per ton,* or exactly half the price of those produced by superphosphate of lime; indeed, excepting the potass, the whole of the mixtures are *cheaper turnip producers than the superphosphate.* How does the argument look now with regard to the non-utility of alkaline manures? To us, the evident inference is, that the magnesia improves the superphosphate of lime; so that the whole matter rests upon the potass. We have already shown that the mixture containing it is 90 lbs. of phosphoric acid poorer than No. 22, and it must be especially observed that a greater weight of this (the most expensive part of the mixtures) is used in No. 17 than in any of the others; and before deciding absolutely on the value of potash, a mixture should be tried, containing as much of that substance as would bring the cost down to that of the others. When that has been done, we may decide on the value of potash as a manure."

This kind of reasoning is, in such a case, so ridiculous, that had the selections and calculations been fairly made, we might almost have allowed it to pass unnoticed. As it is, however, we have here another instance of the lavish exercise of trickery, which, we believe, pervades *every attempt at argument* on the part of our critic. Whilst then we entirely deny the legitimacy of any such inferences as our critic seeks to draw, we shall show that by adopting his own method of illustration, *superphosphate of lime is proved to be the cheapest turnip producer of the series* provided an honest selection is made for the comparison. We shall, then, *substitute No. 21 for 22.* Before we can do this, however, we must determine on what scale to fix the cost of the manure of No. 21, so that it shall fairly compare with the rest. Every attempt which we have made to discover, by the assistance of any knowledge of our own on such matters, any uniform rate of charge in the table of our critic has entirely failed: it is at all events clear, however, that whilst he has charged the superphosphate of lime at the *retail selling price* of the manufactured article, he has made the others appear comparatively low by taking them at the *manufacturers' cost price!* He has, however, informed us that the manufacturer purchases potash for £38, and soda ash at £12 per ton; so that we should be able to calculate the cost of the remaining ingredients, when that of these substances is deducted from the total sum. Let us see then what will be the cost of 400 lbs. of calcined bone-dust and 420 lbs. of sulphuric acid, when ascertained in this way.

No. 15 contains 315 lbs. soda ash, at £12 per ton = £1 13s. 9d.; which, deducted from £3 5s. (given as the total cost of the manure), leaves for 400 lbs. of calcined bone-dust, and 420 lbs. of sulphuric acid, £1 11s. 3d.

No. 17 contains 470 lbs. of pearlash, at £38 per ton = £8 ; and the total cost of the manure being given as *only* £7 15s., there remains for the sulphuric acid and calcined bone dust less than £0 0s. 0d.

Let us take the positive rather than the negative sum, and say that 400 lbs. of calcined bone dust and 420 lbs. sulphuric acid cost £1 12s., which is perhaps not far from the estimate by which the table is intended to be arranged, for No. 16 is charged £1 17s., which allows 5s. for 2 cwt. of magnesian limestone. But No. 21 contains 20lbs. less sulphuric acid than the rest, for which we will only deduct 1s.: and we will leave the cost of the other manures as quoted above, though that of No. 18 should be increased by the value of 420lbs. of sulphuric acid, there not estimated; and No. 17 should be much higher, as it would seem that the *calcined bone dust and sulphuric acid* have been forgotten, or for other reasons omitted, in the calculations for that number. Here then is *our* table—

	Tns.	cts.	£	s.	d.	s.	d.	
No. 15 produces	11	15 at	3	5	0 =	5	0	per ton.
16 ,,	12	1	1	17	0 =	3	0	,,
17 ,,	10	19	7	15	0 =	14	0	,,
18 ,,	12	12	3	2	0 =	5	0	,,
21 ,,	13	2	1	11	0 =	2	4	,,

We in our turn might now say, "This calculation gives quite a different view of the whole matter;" and ask, "How does the argument look now with regard to the non-utility of alkaline manures?" and add, "To us the evident inference is, that" *superphosphate of lime is the cheapest turnip producer of the series.*

Enough has, we think, been advanced to enable the reader to form a fair estimate of the honesty of the assertions of our critic, and of the validity of the arguments by which he would maintain a case against us. In support of his own representations, having for their object the advocacy of the use of *manufactured* alkaline manures for the growth of turnips, our "*Farmer*" refers to several authorities, and first of all to Liebig. Now the passage he quotes from that writer asserts neither more nor less than that alkalies and other mineral substances must exist in the soil "*in abundant quantity*"—an evident truism, having nothing whatever to do with the source from whence those alkalies are to be supplied. Truism or not, however, it is intended to appear that our views are contrary to those of Liebig and to common sense in this respect, for

whilst it is granted that we admit that the turnip cannot grow without alkalies, it is stated that "the principal assertion" in our paper is that no advantage was derived from the use of alkaline manures. Our critic kindly adding for us—"And that they can be superseded by superphosphate of lime; in other words, *that superphosphate of lime, without potass or soda, is all that the turnip crop requires.*" How far the question of the alkalies would be said, by farmers generally, to be the "principal" one of our paper, any reader can decide; though to the *manufacturer* of manures containing them, we are not surprised that our observations should appear both "principal" and "important." And here we would call attention, in passing, to the singular direction of the *sympathies* of our "*Farmer*," as shewn by the sentence immediately following the quotation last given from his article: it is as follows—"This is a most important question, *and bears strongly on the manufacture of manures*, which now engages so much attention. Should Mr. Lawes' view of the question be correct, the *manufacturers* of those articles commit a great folly in purchasing potash for £38, and soda ash for £12 per ton; as it appears that the addition of these substances does not improve the manure." Really the disinterestedness and generosity of the "*Farmer*," who is thus concerned for the effect our views might have upon the interest of the *manufacturer* rather than the *consumer* of artificial manures, is to us, with our selfish notions, quite unaccountable. Perhaps no such evidence of the origin and objects of the article is needed, yet we would suggest that here a significant truth has been unwittingly allowed to leak out.

But to return to the authorities quoted against us—we perfectly agree with Liebig, that alkalies must exist in the soil "*in abundant quantity*," or to use the summing up of his views, as given by our opponent, "That the alkalies are as indispensable to the growth of vegetables as the other inorganic ingredients which have been discovered in their ashes." As for Mr. Main's results, we know nothing of the circumstances and details of his experiments, so that we can give no opinion respecting them, otherwise we have no doubt they would be perfectly intelligible. It is worthy of remark, however, that *his* results are quoted in favour of the use of alkalies, though the preparations he used were sulphate of soda and saltpetre refuse; both "*salts*," in which when our experiments, giving different results, were discussed, it was declared that "*no alkalies exist.*" We perfectly agree with Mr. Moffat "*that the farm-yard manure is especially rich in those matters*" (potass, soda, &c.), "and, therefore, qualified to give abundant crops of turnips;" and further, that "not so the guano; in it we notice a large deficiency of all those constituents which *constitute the perfection of farm-yard dung* for turnips;" and also when he says, "It is my opinion that if successive crops be raised *from guano or bones alone* upon poor land, and be drawn off the soil to be consumed elsewhere, such soils will become so exhausted of alkalies that they will eventually refuse to produce any crop whatever." To the remarks of Mr. Moffat, as we have here given them, we most willingly subscribe; though we must beg leave entirely to differ with him, as to the legitimacy of the inference which leads him to the recommendation, which is thus worded—"To the usual quantity of bones add 1 cwt. of pearlash, 4 stones of Epsom salts (sulphate of magnesia), 3 cwt. of common salt;" and this for reasons which the reader will presently understand.

This brings us to the question of the proper source of the alkalies in agriculture; and we so fully agree with our opponent, that "the proper and *early* solution of this question respecting alkaline manures is of more importance than may appear at first sight," that we shall endeavour to put it in such light as will be intelligible to any one who will bestow a little consideration upon what we shall advance. In so doing, we shall rely, as far as we are able, upon such simple matters of fact as can be appreciated by any attentive person; at the same time pointing out or avoiding those sources of mystification by which fraud, *or want of due consideration of the actual facts of practical agriculture*, have in their terms served to complicate it; and we think it will be admitted that common usage, calculation, and direct experiment, all tend to justify the opinion given at page 527 of our paper, that, "*in the ordinary course of farming, the special supply of alkalies to the soil is exceedingly rarely requisite.*"

The farmer is told of the large amount of alkalies taken from his field in a crop of turnips, and the conclusion is instantly arrived at for him that he must return them by direct application of *purchased alkaline manures*. We would recommend him, however, first to pause and consider whether what is thus taken *from his field* is sent *off his farm*, or whether it entirely or in part remains upon it, and is again returned to the field in the usual course of farming; for it will readily be understood that the necessity for *import to the farm* should only be measured by the balance of the *exports from it*. In fact, if the amount of alkalies contained in an acre of turnips were fifty times as great as is really the case, this would afford no reason for the purchase of alkaline manures, provided those alkalies of the turnip crop *were retained in the home manures of the farm, and returned in due order to the field from whence they came.* Again, it must be observed that, practically speak-

ing, the exhaustion of the farm of any constituent depends not upon the *actual* quantity of it existing in the soil, but upon the *proportion* to other constituents. Thus a farm whose soil contains an amount of alkalies small compared with that of many others, may, provided it be still more deficient in other constituents, be considered as having for all useful purposes an *excess* of alkalies; and, if it should be found that those usages of practical agriculture which diminish the actual stock of alkalies on the farm, do at the same time in a proportionally greater degree diminish that of other matters, which must be provided before a replenishment of alkalies could be of any service, and that the means adopted for the provision of these other matters do, in fact, at the same time bring an adequate quantity of alkalies thus *indirectly* to the farm, it will be seen that the *direct* supply of alkalies, by means of special and manufactured manures, will not be necessary.

Bearing these facts in mind, let us direct attention to what actually becomes of the alkalies in the usual course of farming—that is to say, where corn and meat are the only products sent to market; for it must be distinctly understood that our remarks are only intended to apply to agriculture as most generally practised, and not to any extraordinary course, the result of local demand or bad management; for we fully admit that if hay and straw or green crops, grown only by means of guano or super-phosphate of lime and ammoniacal salts, are *sent off the farm*, the alkalies of the farm will in time become deficient; but such a course *is not agriculture.*

At pages 561-2 of our paper on turnip culture, it will be found that we have approximately traced the constituents of a fair crop of turnips through the ordinary four-course rotation, namely, turnips, barley, clover, and wheat. It is there shown that, supposing the turnips to be eaten by fatting animals—forty bushels of barley sent to market—the clover consumed upon the farm—thirty bushels of wheat sold, and the straw of both the corn crops kept upon the farm—the export of phosphates during the four years would be greater than the amount contained in the turnips, whilst the amount of alkalies of the turnip would not be sent off the farm under twenty years or more. If the turnips were consumed by breeding or growing animals, there would, of course, be a much larger loss to the farm of phosphates in the bones of the animals, whilst the amount of alkalies existing in the animal at any one time is exceedingly small, though a great deal passes through it.

It will be seen, then, that, whilst under such a course as is supposed above, there would be only part of the phosphates of the turnip and clover crops remaining in the home manure, and that the soil had, besides this, lost more than sufficient for the next turnip crop by the scale of *grain*, yet the only loss to the farm *of the alkalies* is that of the grain, amounting to less than one-fifth part of that required for the turnips, very nearly the whole of that which had been taken off in the last turnip crop, the clover and the straw of the grain crops finding its way into the home manures, of which every acre is supposed to have its share when the time comes round. It is not to be wondered at, then, that practical agriculture has, independently of theory, or of direct scientific inquiry, settled that the supply of phosphates by purchased manures is a matter of much greater necessity than that of the alkalies.

In the case supposed, however, there is nevertheless a certain loss of alkalies *to the farm*, which would amount to about from 20 to 28lbs. per acre in the four years, or 5 *to* 7*lbs. per acre per annum.* It will be admitted that there are few cases indeed, *if any*, where such amounts of produce as we have supposed are sold off the farm without the aid of imported food, such as oats, &c., for horses, or pulse, oilcake, or linseed for animals for the market. If no food be purchased for horses, then the estimated sale of corn must be reduced, as some of the produce of the farm must be consumed in its stead; and if food is purchased for horses, the whole of the minerals, alkalies and all, of that food remain upon the farm, whilst those of the organic constituents of the food which remain in the manure are not sufficient to increase the produce of corn for sale in proportion to the alkalies associated with them; so that in this case we have, then, the 5 to 7lbs. per acre per annum reduced, leaving less than that amount to be derived from the soil itself by the constant decomposition of its minerals; and no one, who understands anything whatever of such subjects; will maintain that any soil could yield, without the importation of artificial food, the amounts of produce mentioned above, except such as are well known to be able to yield up a much larger amount of alkalies than our case requires.

On few soils, however, would it be possible to send such an amount of corn to market, excepting under a system of liberal consumption, by stock, of purchased food, or by the use of large amounts of such matters as rape-cake as direct manure; and one or other, or both of these plans together, do, in fact, constitute the general practice when land is well farmed. Now, we believe that practical men do not calculate upon an increase of much more than one bushel of wheat from one hundredweight of rape-cake; but, assuming that one hundred-weight of wheat, or about one bushel and three-quarters, is obtained, the result would be that

when our sales of corn are thus kept up by the use of rape-cake as a manure, a constant accumulation of the alkalies upon the farm would take place.

Again, taking the case of imported *food*, such as oilcake, linseed, or pulse, and allowing that these imported foods produce on an average an increased sale of corn equal to their own weight, it will be found that here again the stock of alkalies in the farm is constantly increasing.

But independently of these considerations, which are well worth the study of the farmer, universal practice and many experiments of ourselves and others, show that *agricultural exhaustion* is not dependent on a deficiency of alkalies in the soil relatively to other constituents. If the facts are otherwise, we can only say that the farmers of Great Britain are exceedingly blind to their own interests if they continue to purchase bones, guano, and superphosphate of lime, instead of the cheap refuse of our own manufactures, found by Mr. Main to be so productive; or let them, if they prefer it, adopt the receipt of Mr. Moffat, and add to their usual acreage outlay for turnip manure, that of 1 cwt. of pearlash, costing, according to our "Farmer," 38s.! half a hundredweight of sulphate magnesia costing 6s.; and 3 cwt. common salt. It is something extraordinary that this receipt of Mr. Moffat's is strongly recommended by our opponent as a means of supplying *alkalies* to the soil, when, as we have before remarked, he took considerable pains to convince his readers, that as we had used "*salts*" of the alkalies, our experiments were not fitted to ascertain the value of *alkaline manures!*

But the simple remark of our critic, when explaining Mr. Moffat's views, "that the farm-yard manure is especially rich in those matters (potass, soda, &c.), and therefore qualified to give abundant crops of turnips;" and that of Mr. Moffat himself, when speaking of the composition of guano as compared with that of dung—"But not so the guano; in it we notice a large deficiency of those constituents which constitute the perfection of farm-yard dung for turnips"—in these remarks, we say, everything is conceded respecting the proper source of alkalies in agriculture, which either ourselves or the farmers could desire. It is true that Mr. Moffat's table of analyses does not show that farm-yard dung provides *enough* of alkalies; but it would be easy to show that this is owing to the fallacies of the table, and not dependent on the facts of the case.

We have before observed that the authority of Liebig is brought forward in urging the use of direct alkaline manures; though, as we have pointed out, the quotation adduced to that end had nothing whatever to do with the question. It cannot be denied, however, that Liebig has elsewhere very strongly advocated the use of such manures; for in reference to vol. xxvii, and page 258, of "The London Journal and Repertory of Arts, Sciences, and Manufactures" (for Nov., 1845), it will be found that a patent was granted to Mr. James Musprat, of Liverpool, in that year, for improvements in the manufacture of manures; the invention being the suggestion of Professor Liebig, and the object of it supplying to the soil by manufactured manures the mineral constituents, and especially the alkalies, found in the ashes of the crops which had been previously grown. Surely the name of Liebig must have secured for these manures a fair trial; yet, if we are rightly informed, the manufacture of them is now entirely abandoned—a fact which we think affords the clearest evidence that there must be some fallacy in the theory which has suggested them. It is with reluctance that we draw attention to this point, and we should not have done so were it not that the authority of Liebig is quoted against us in a matter bearing so materially upon the economy of practical farming. Indeed, none can hold the talents of Professor Liebig, and his services to science generally, and to agriculture, in higher estimation than ourselves. And we should be exceedingly sorry to say a single word which might appear wanting in the respect due to his opinions. It must be admitted, however, that in his application of science to *practical agriculture*, he has fallen into some errors which were not likely to be avoided in the absence of that consideration of the actual details of farming, which an intimate acquaintance with the art could alone secure.

Bearing upon the question as to whether or not *agricultural exhaustion* is connected with a deficiency of alkalies, we may observe that our turnip experiments were conducted upon land from which wheat, clover, wheat, had previously been taken; and which, without manure, would probably have yielded not more than 15 to 20 bushels of corn: and which, in the first year of the experiments, did, in fact, only yield 4¼ tons of turnips without manure, though with superphosphate of lime 12¼ tons were obtained. Upon this land turnips have been grown for six successive seasons, and during that period alkalies have been taken from some of the plots at the rate of 540 lbs. per acre; an amount which would not be lost to the land in much less than a century under the ordinary course of *home manuring, and export of corn and meat*, before supposed. And it is worthy of remark that during the same period, actually less has been obtained from other plots where an enormous supply of alkalies has been provided by manure. It is true, however, that notwithstanding the large actual amount

of alkalies which it is shown must have been contained in the soil, symptoms of the practical exhaustion of them, under such unusual treatment, have been observable during the last two or three years where none have been supplied, and the other plots are now taking the lead. A similar result is also indicated in our experimental wheat field, from which, since a course of barley, peas, wheat, oats, *five successive crops* of wheat, grain, and straw have been entirely removed; and the application of those manures best calculated to exhaust the land of its alkalies (ammoniacal salts and phosphates, for example), is annually becoming less efficient. But as we have before said, such procedures do not come under our denomination of agriculture. Such experiments, however, satisfactorily show that the amount of alkalies actually present and available in soils considered to be in a state of agricultural exhaustion may be very great compared to that of other constituents; and the inevitable inference from them is, that either the natural soil yields up alkalies much faster than they are wanted in the ordinary course of cropping and manuring, or that the system of culture adopted tends to accumulate them from other sources.

From all that we have advanced, we think that we are perfectly justified in deciding that the necessity of the use of direct alkaline manures cannot, at any rate, be maintained on account of *exhaustion* under the ordinary course of manuring and cropping; and we would observe, that never, to our recollection, have they been advocated on any other ground. No well-authenticated experiments, that we are aware of, have ever been cited to prove any special beneficial effect of alkalies, in increasing the produce, either of corn or of green crops, in a soil exhausted only by the usual processes of farming; whilst many results of our own bear in the opposite direction. In the solitary case of *beans*, we believe that a good effect is produced. Whilst, however, we cannot admit the *general application* of manufactured alkaline manures in agriculture, we by no means deny that their use may, in some special cases, and under some special circumstances, be attended with benefit. Thus, for example, when the home manures are subject to loss by drainage, in a very wet season, whenever undue amounts of phosphates and ammonia are supplied by manures, or too little purchased food is employed—in such instances the cheaper refuse alkaline salts may perhaps repay a trial. The case of the sale of hay and of straw scarcely need be mentioned, for the same local circumstances—namely, the *proximity* to large towns—which lead to a demand for those articles, generally at the same time fully compensate the loss of the alkalies, by the return of night-soil, stable dung, and other town manures containing them. If, however, phosphates and ammonia be alone resorted to in such cases, the alkalies will then undoubtedly soon become inadequate in quantity.

We do not hesitate, then, to repeat the sentence, already once at least quoted from our paper, namely, that "It is our opinion that *in the ordinary course of farming* the special supply of alkalies to the soil is exceedingly rarely requisite." And again, from page 562—"That, unless by actual waste, there is, under an ordinary course of farming, without the use of imported food, a comparatively small decrease of the available alkalies in the soil; but when we consider the vast amount of alkalies existing in the soil itself, and set free by annual decomposition, and that in every well cultivated farm there will be a considerable quantity imported in cattle food, there can be little doubt that, under ordinary circumstances, the alkalies accumulate in the soil."

In reference to the evidence and arguments we have adduced on the subject of the general necessity of manufactured alkaline manures, we would, in conclusion, observe that they have been, from full occupation, somewhat hastily drawn up; and, although we are ourselves perfectly satisfied with their general correctness, yet we would submit them to the reader rather as a means of leading him to consider the question in a perhaps somewhat different view to that in which it is generally put to him, in order that he may come to his own conclusion in the matter, than in any degree wishing to force upon him any decisions of our own. None will admit, indeed, more readily than ourselves that the farmer should receive with the greatest jealousy any opinion on the subject of artificial manures from those in any way commercially connected with them, and from scrutiny on this ground we have no wish whatever to be exempt; nor do we fear the credit or the blame which the acknowledgment of our views may bring upon us.

On reading over our remarks, we cannot but admit that the tone and temper of those of them which are in reply to the attack which has been made upon us are sometimes such as would be very undeservable in open and fair discussion with an acknowledged and creditable opponent, but we think it will be conceded that they are not on that account the less appropriate on the present occasion. We would, however, beg to say, that if, in future, our views should be assailed by an anonymous critic, who can find no other weapons than misrepresentation and abuse, we shall probably, after this warning, leave the farmer to decide for himself any questions important to his interest which may thus be raised. But if the views we

have advocated are really so erroneous, and at the same time calculated seriously to mislead the farmer, surely some one whose name is known, and whose character and opinions are respected, will come forward to rescue him from error and deception. In such case we hope it will be found that we shall, with all candour, admit any error proved against, or in a suitable spirit and temper maintain the validity of, our opinions. J. B. Lawes.

Rothamsted.

HOUSE SEWAGE.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

The very valuable act of the late session of parliament (11 & 12 Vic. c. 63), for the promotion of the public health, is now about being put in operation in many portions of the kingdom.

At such a period, when surveys are making in so many directions, for the better drainage of towns, and a great advance is contemplated in the removal of the sewage of houses into the nearest river, a plea on behalf of agriculture may not be without good effect; and I feel the more anxious on the subject because I am well assured that, in many localities, it will be easy for the surveyor so to arrange the requisite main sewers as to satisfy the paramount sanatory demands of the public, and, at the same time, attend to the profitable use of the town sewage in irrigation. On a former occasion (vol. 26, p. 471), I gave, in this valuable magazine, the analysis of the sewer water of two or three large towns, in order to chemically demonstrate its value as a manure; and, in gathering together additional evidence as to its ordinary composition, I am still actuated by the conviction that the composition and value of the contents of town sewers are much too little understood even by those to whose care they are commonly committed. With the public at large the most erroneous ideas usually prevail as to its nature—some persons, and these the larger portion of the public, regarding the sewage of a town as a semi-fluid mass; and others more justly deeming it to be merely a dirty kind of water. The examination of the contents of a London sewer, by Professor Brande, will give a tolerably accurate detail of the amount of impurities which a town sewer contains. He told the Committee on the Metropolitan Sewage Manure Company's Bill (Evidence, p. 52): "In the first place we wished to get a fair estimate of the components of the sewage water, and we had samples taken every hour, so that we had twenty-four samples in the whole. They were divided into four groups of six hours each. The first group (A) included the samples taken from noon to five o'clock in the afternoon; the second group (B) included those from six o'clock in the afternoon to eleven o'clock at night; the third group (C) from midnight till five o'clock in the morning; and the fourth group (D) from six o'clock in the morning to eleven. These groups were examined, in the first place, as to the quantity of matter which they held in suspension, that is, of insoluble matters, and then as to the portion which they held in solution. The insoluble deposit from group (A), that is, from the samples taken between noon and five o'clock in the afternoon, amounted to 34.3 grains per imperial gallon; this consisted of 17.8 grains of animal and vegetable matter and fat—there being a considerable quantity of grease, which I call fatty matter; for, when the insoluble residue was put on to the fire to burn, it burnt with the flare of fat; and, in order to convince ourselves that it was fat, we tested the residue with ether, and in that way dissolved it out, and found that it was *bonâ fide* fatty matter. The remainder of the insoluble matter, which amounted to about 16.5 grains, consisted of phosphate of lime, carbonate of lime, sulphate of lime, oxide of iron, alumina, and a good deal of sand—in fact, very finely divided silica. The second set of samples (B), taken between six and eleven in the afternoon, contained of insoluble matters, which were deposited by rest, 107.3 grains per gallon, of which 40.9 grains were organic matters, and 66.4 grains of saline or mineral matters as in group A. The third group (C) contained only 20.3 grains per gallon of insoluble matter, of which 11.1 were organic, and 9.2 inorganic substances. The deposit from a gallon of the fourth group (D) weighed 58 grains, of which 15.1 grains were organic matters, and 42.9 grains saline, and earthy substances. We then," continues the professor, "turned our attention to the water itself, which was poured off from these deposits as clear as possible, and mixed, so as to give an average of the whole of the samples. We endeavoured to filter it, but we found that there was something viscid, or glutinous, which prevented its going through the filter; and therefore we could only allow it to clear by subsidence. We poured off the clear liquor, and found that a gallon of that clear solution left, on evaporation, 85.3 grains of a brown solid residue." Now, it will be convenient, I think, to give again

the analysis of these 85.3 grains, 74.8 grains of which were found to be again soluble in water, and 10.54 insoluble. The first consisted of—

Ammonia	3.29
Sulphuric acid	0.62
Phosphate of lime	0.29
Lime	6.05
Chlorine	10

with potash and soda, and a large portion of soluble animal and vegetable matter.

The second, or portion not again soluble in water, equal to 10.54 grains, was composed of—

Phosphate or lime	2.32
Carbonate of lime	1.94
Silica	6.28

The composition of the average deposit from a gallon of the sewer water, found to be equal to 55 grains, was as follows—

Animal and vegetable matter	21.22
Phosphate of lime	6.81
Oxide of iron	2.01
Carbonate of lime	1.75
Sulphate of lime	1.53
Earthy matter and sand	21.65

It will be useful if every one, who is in any way connected with the sewage of a town, will bear the results of this investigation in his memory. The analysis is quite sufficient to explain the reason why the sewage of a town applied to grass land produces such luxuriant crops of grass; and why, as in the cases of Winchester and Salisbury, the contents of a city sewer are found to even improve perceptibly the fertilizing qualities of the waters of the Itchen and the Wiltshire Avon. The use of the sewage even of a single house has been found in this way very useful, by Mr. Knight and other nurserymen, for their gardens; and, in my own garden I have adopted a plan of filtering the sewage of the house, which removes every objection that can be raised to its use. I feel convinced that so much good may be accomplished by the use of house sewage in this way, both to the health and the profit of the inhabitants of rural districts, that I will here repeat what in a recent number of a valuable little periodical edited by my brother, Mr. G. W. Johnson, I had occasion to remark (*The Cottage Gardener*, vol. 1, p. 8). In erecting, last year, a cottage at Waldronfield, near Croydon, I took the opportunity of testing a plan for employing the sewage of the house (I use the word sewage, in this paper, in its most extensive sense) for the use of the garden, which has succeeded so well that I think it might be employed in most situations, with the required modifications, with the same measure of success. For although, in my case, I have the advantage of a considerable fall between the house and the kitchen-garden, yet that circumstance is not essential to the success of the plan: for even in the case of a perfect level, it would only be necessary to add a common iron lifting pump to the second tank; or the object might be accomplished by even one tank only, if furnished with a division. My plan was to test the possibility of filtering the *entire* sewage of the house through a filter of sand sufficiently fine to remove almost all the mechanically suspended matters of the sewage, and thus render the filtered fluid available as a rich liquid manure, without being offensive to those who had the use of the garden. For this purpose I had two tanks, constructed of bricks and mortar, and lined with Parker's cement, of about five feet cube each. Into the first, *all* the sewage of the house is discharged through an iron pipe of 4½-inch bore. This tank is furnished with an iron pipe of the same diameter, which (regulated by a long-handled plug from the top of the tank) discharges the sewage as it is needed from the tank No. 1 into the tank No. 2. This is furnished with a filter, through which the liquid portion of the sewage finds its way, and is thence drawn off from the bottom of the tank by means of iron pipes of ¾-inch bore, to convenient places in the garden. The filter is placed (resting on bricks) about eighteen inches from the bottom of the tank: the bottom of the filter is formed of perforated tiles, used by maltsters for their kiln floors; on this is laid a layer of gravel, about two inches thick, on this about two inches of coarse sand, and on the top of the sand (to prevent disturbance by the rushing in of the sewage from the upper tank) another layer of the maltsters' tiles. Thus constructed, the sewage finds its way through the filter with sufficient rapidity for the copious supply of the kitchen-garden. As thus prepared, the liquid manure passes through, so as to possess but little smell, and without leaving any obnoxious appearance on the surface of the ground. I need hardly say that the effect of this liquid is exceedingly powerful; and we have noticed it as remarkably so in the case of some newly-planted beds of asparagus and rhubarb, which have been irrigated with it; and, in fact, there is no doubt of its value for ensuring the rapid growth of all kinds of culinary vegetables. I have so arranged the pipes in my kitchen garden, that I can irrigate any portion of it, by merely turning a cock. This plan of filtering seems, in fact, to remove all the objections that can be possibly urged against the use of the house sewage; and in the case of gardens, both for the amateur and the poor cottager, I feel convinced that by such a mode as this, many of the difficulties of incessant cropping, and little-varied exhausting rotations, may be successfully met. The waste of fertilizing matters in such sewage is, in fact,

so much larger than is commonly supposed, (a loss by the ordinary mode of constructing these tanks disguised in every possible way,) that I feel assured it only needs the adoption of some such a mode as that which I have described, of rendering its use no longer distasteful to the occupants of the house, to ensure its almost universal employment. The amount of sewage is much larger than is commonly understood; and in dry weather, when the demands of the gardener are larger, it is, we find, very easy to increase its bulk, in case of need, by pumping water into the tanks through the ordinary house drain. It may be useful to those who are about making similar attempts for me to add, that the ¾-inch iron pipes (gas service pipe) cost 1s. per yard, and the iron cocks of the same bore 2s. 6d.*

On a large scale, and through such a filter, made of a coarse material, I feel well assured, field operations will be, hereafter, readily and extensively conducted. Such a system will prevent every objection which may be raised in certain localities on the score of the floating impurities of town sewage, and it may, in this way, be beneficially brought into use in the gardens of not only the humblest cottager, but in those of the more opulent and refined classes of society. I have but endeavoured, I again repeat, to draw the attention of the constructers of these sewers to the agricultural value of their contents: it is for them to adapt these great and salutary drains, according to the locality in which they are labouring, to the just and nationally important demands of the citizen on the one hand, and the countryman on the other.

POSITION OF AGRICULTURE.

BY J. TOWERS, MEMBER OF ROYAL SOCIETIES OF AGRICULTURE AND HORTICULTURE.

The progress of the seasons during the present year to the end of October offers considerations of very serious interest, and therefore I propose to take a cursory review of them, as bearing upon agriculture, from the commencement of the year. Comparisons are occasionally useful, though they by no means point to accurate conclusions. If, then, in the first place, we look retrospectively to the condition of the young wheat on the 1st of January, 1847, just prior to the final setting-in of that surprising run of cold winter weather, which did not terminate till the end of April, we shall find the plant scarcely visible on the surface, and for the very sufficient reason, that as through the excessive rains of October, 1846, the seed could not be deposited in the ground till late in November, so the very keen frost of December, which continued nearly without interruption, prohibited the advance of the plant. October, 1847, was in like manner extremely rainy, but seed-sowing was little retarded, because the ground imbibed every drop of rain which fell; but, as no frost occurred in December, the young wheats were green, covering the surface very regularly without patches or other indications of insect depredations. Thus, then, we start fair. In January, 1847, the ground was almost bare; in January, 1848, it presented a beautiful promise of early abundance; but in the former of these years, for half of the first month, frost continued till April, and even then it remained cold and parching, for not one genial spring shower had fallen; the wheat, therefore, made no start, and until the 6th of May the land exhibited no verdure; but on the 7th rain fell, the temperature rose, and all nature started into life. Little more need be said of 1847; a powerful sun prevailed till October; the hay was scorched, but every one reported (with truth) favourably of the wheat. It was superb in quality, and was harvested in perfect condition. The bulbs and roots suffered, however, and crops of turnips and mangold were rendered comparatively unproductive. Here, however, one fact of undeniable importance offers itself to the agriculturist; the turnip cabbage— kohl rabi (*Brassica caulo-rapa*)—cultivated hereabout by some of our first-rate farmers, flourished and bulbed to perfection. It is indeed the *turnip of dry weather*; sustains drought and defies the grub, as we proved in Berks and Buckinghamshire during the ravages of the caterpillar of *Ægrotus* in 1837. Independently of the hardihood and security of this invaluable bulb, it may be safely stated that it attains very frequently the weight of eight, nine, and ten pounds, and that a whole field of many acres can fairly be estimated at six pounds as the average of the individual bulbs; this fact has been questioned, but it is too stubborn to be overthrown. Labour, order, and cleanness of soil are assuredly required; the seed must be sown in February, the plants removed when about the size of common broccoli seedlings, to rows three feet apart of deeply tilled land, and the spaces kept clean by the horse-hoe till the lateral foliage nearly meets. From these

* I purchased mine of Messrs. Bailey, Pegg, and Co., Bankside, London.

processes our old routine farmers shrink; but their results are equally certain and remunerative.

This digression will be pardoned, but now to return to our comparison of seasons.

As the two Januarys, to half their extent, were equally favourable in character, so nothing could be more at variance than the weather of their three immediate successors; for, as we stated, parching aridity prevailed in 1847; but in the half of January, and thence to the 29th of April, 1845, there were scarcely seven bright and genial days, while rain and gloom, with low temperature, not only retarded the progress of the wheat, converting its herbage into a sickly yellow, but offered an insurmountable obstacle to the timely operations of the spring. May came in hot, and perfectly fine; the splendour of the sun throughout the month was remarkable, and its effects proportionate. Wheat recovered its characteristic green tinge, and throve. The heat, however, continuing to increase from 56° to 76° (its maximum on the 16th day), dried the ground too rapidly; it cracked in all the clay soils, and meadow grass was very thin at bottom, especially where the earth reposed upon a subsoil of gravel. It now became evident that the wheat had lost some plant, and farmers talked of serious deficiency that could not, by possibility, be redeemed. The inference I would arrive at from these statements, is this: a winter may be very severe, long protracted, even till the heart of spring, reducing the appearances and promise of a harvest almost to a nonentity, and yet, if the last week of April and the first half of May prove genial, the picture undergoes a complete change, and nature puts on her most ample and verdant attire. So it was proved in 1847; but, on the contrary, during the last spring, March dust was never seen, and six weeks of drenching rain continued to fall on land already saturated with water.

June came in wet, and our calendar enumerates 17 days more or less rainy during that month. July and August were equally unpropitious; there were a few sunny intervals, seldom of three days' continuance. The thunder-storms of August were terrific. From these data it will be evident that summer existed only in name; and under circumstances so truly discouraging harvest commenced, and became general. In the N. and N.E, however, the weather, though cold, was far less rainy.

They who can retrace the progress of agriculture from the close of the last century, must be convinced that improvement *has been* made. Wet seasons have occurred, as examples of which I refer to the years 1797, 1799, 1809, and 1816; but, with the exception of 1799, not one throughout the period of 51 years appears to have been so perplexing throughout all its seasons as the present year 1848; yet the harvest, as a whole, has been safely housed. Had the farmer of bygone years been subjected to the difficulties which have lately occurred at every critical moment, his sheaves would have remained blackening in the fields, as they were, to a greater or less extent, in the years above cited! Improvement in practice has therefore been manifest; yet many errors remain to be corrected, and these have led to the injury and deterioration of grain which we hear of in all quarters. Wheat, barley, and oats, in numerous instances, had long—far too long—been exposed, and consequently there were sprouted ears; but, while admitting the fact (which *ought not* to have existed), we insist that there has been much wanton exaggeration, and moreover, a great deal of the mischief occurred among those sheafs which were blown down and suffered to remain on the ground. As to the corn being housed in so wet a condition that water could be squeezed by hand from the ears, we repudiate the *assertion* in toto; it had its origin in slander, promulgated for an express purpose! But *corn need not* be exposed to injury or damage. The hand of diligence, guided by sound discretion, might seize every propitious day; and that it did do so in several instances, we had ample proof in this immediate neighbourhood. I myself inspected a plot of wheat of more than twenty acres, which being left *till perfectly ripe* early in August, was then cut, bound, and carried to rick without a shower, excepting one which fell on the last waggon-load or two. The whole force of the farm was brought to bear on the work, and the reapings of *each fine* day were stacked and covered with a rick-cloth before night set in. I examined the three ricks some weeks after, and found the whole in the finest state, equally fine with that of another wheat-rick of 1847 which stood close at hand. As a converse example, and one which corresponds with the too general practice, I saw round Annerley, on the 10th of August, many fields of wheat in sheaf, and being reaped; the day had been splendid, but at five o'clock, a violent storm of thunder and rain came on, and deluged the cut corn, and that very wheat remained a-field more than a fortnight! Should these things be so? Let the judgment be exercised, and not suffer itself to remain in trammels to old customs, or indeed under any routine; for the farmer may rest assured that to do himself and the consuming public strict justice, he must conform to circumstances, and square his practice to the character of the seasons. It is very true that, in ordinary fine summers, wheat yields more and better flour if it be cut somewhat green, and remain in the field sufficiently long. When the weather continues sunny, with a lively drying air, there can be no cause for hurry or solicitude; but in catching

seasons, and especially in one so decidedly wet as the last (excepting the three first weeks of September), it is far more wise to sacrifice a little than to incur the risk of damage to the entire crop. If wheat is suffered to become dead *ripe*, there are always sunny intervals sufficiently long to secure the crop in detail. The fact is proved, and cannot be impugned.

I always regret the practice of mowing barley in showery summers; the ears lie exposed on damp herbage, and the proximity of the ground promotes germination. Oats suffer less than wheat, as each seed is protected by its integuments and loose husks; nevertheless, the protection of the *hooding-sheaf*, so well known in the north-western counties, forcibly suggests itself.

We cannot command the seasons, and wet summers are of certain recurrence. It may not, perhaps, be far from the truth to estimate that five summers out of nine are showery—that in the ordinary cycle of seasons, one in about seventeen is decidedly wet—also, that two of a wet character occasionally come in succession. Our husbandmen, therefore, should consult the weather tables, or take notes themselves, abandoning the folly of having recourse to the delusive prognostics of the old almanacs; but, above all things, every mode of practice which can increase and accelerate the crops ought to be adopted. The landlord-and-tenant question has been on the *tapis*, and every day acquires fresh interest. I, for one, pretend not to glance at minutiæ, but as a general principle I assert, without fear of contradiction, that the more speedily each party shall abandon selfishness as a governing agent, the more prosperous will be the results on both sides. *Draining*—thorough in its adaptation to the several temperaments of the land—is the great curative measure which demands immediate adoption, and with it a deep comminution of the ground. To effect these meliorating objects, mutuality of exertion is required. Our land and climate are so excellent, that no measure of improvement ought to be neglected. At present, under existing circumstances, not one farm in fifty is sufficiently drained—not one in ten is adequately worked and tilled by the occupier; old routine, want of foresight, of diligence, and discretion, indicate bad or inefficient farming. Brilliant exceptions are within our immediate ken; but they usually are seen where the proprietor farms his own land, and possesses ample funds. The existing evils must ultimately point out an adequate remedy, but till landlord and tenant can be brought to a clear and just understanding, we must continue to point to certain known causes of deterioration, and none appears more open to view than the predominance of useless timber, wasting hedges ill-placed, and harbouring pernicious vermin, and none still more than the amazing extent of land entirely out of cultivation. Labourers are abundant. Surely they could and ought to be profitably employed!

MANAGEMENT OF STABLES.

The great desideratum in a stable is ventilation. A horse requires air equally with his master; and as the latter requires a chimney to his sleeping apartment, so does the former. The chimney may be a mere outlet, opening through the ceiling, or it may be formed as a dome or cupola. It should not, of course, be open at the top, or rain will get in, but roofed over, and an opening at the sides by weather boards. Besides this, there should be openings in the wall, near the ground, but not in the stalls. This will produce a thorough air; it may be so placed as not to expose the horses to draught. The stable should not be less than 12 feet high, from floor to ceiling, and the former should be well paved, slope slightly backwards, and along the back of the stalls should run a gutter about a foot wide, and an inch or two deep. No stables should be less than eighteen feet deep, and each stall should be at least six feet clear; but if eight feet can be afforded so much the better. Although some horses will agree when kept together in one stall, it is far better to give each a stall to himself. The manger should be about sixteen inches deep, the same from front to back, narrower at bottom than at top, and two feet in length. The rack is best closed in front; the back part being an inclined plane of wood, sloping gradually towards the front, and terminating about two feet down. This rack effects a considerable saving in hay; for we need scarcely remind our readers that, in the common rack, much of the hay given is dragged down, and trampled in the litter. It also prevents the hay seed from falling into the horse's eyes, for the rack, such as we recommend, is on a level with the manger, and about three feet from the ground. Another advantage also gained by this rack is the facility with which it can be filled, thus obviating all necessity for a loft over the stable, and, consequently, admitting of a greater height of ceiling, as well as superior ventilation. The windows and doors should be at the opposite ends; this promotes ventilation; the former at the south-east extremity of the building; the latter should be divided transversely like an ordinary barn door, at the height of about four feet from the ground. The upper portion may thus be occasionally open. Whitewash is a bad dressing for the interior of a stable, as it causes too great a glare of light; paint of a leaden colour is best, and it can be washed from time to time with soap and water. There should be a bin, divided properly into partitions, for oats, beans, &c., and this is better at the back of the stable, and may be made to answer the purpose, both as regards utility and ornament, of a seat. A few buckets of water dashed over the floor of the stable, while the horses are at work, or, if hunters, at exercise, will keep all sweet. The litter should also be turned out to dry, and a bit of fresh straw spread for the horses to stand on. A shed placed beside the stable is a great advantage, on two accounts; it admits of the litter being dressed, and the horse dressed there in wet or stormy weather. A little powdered gypsum, strewn upon the stable floor, will also act by absorbing the ammoniacal gas, a frequent predisposing cause of ophthalmia. Should the ammonia, however, have accumulated in any quantity, the speediest and most efficacious remedy, as a disinfectant, is the laying down a plate, or dish, containing muriatic acid.—*Horses: their Variety, Breeding, and Management. By H. D. Richardson.*

THE LONDON FARMERS' CLUB.—MONTHLY DISCUSSION.

The discussions of this Club were resumed, after the usual interval of the vacation, on Monday evening, Nov. 6, the members meeting, as heretofore, in the Club Rooms, Bridge-street, Blackfriars. The chair was taken at six o'clock by Mr. Shaw, of the Strand.

The subject set down for discussion on the card had reference to the fattening of animals with grain. It was to have been introduced by Mr. R. Baker, of Writtle; but in consequence of that gentleman's illness, a lecture by Mr. Cherry, V.S., on "Pleuro Pneumonia" was substituted, as will be seen from the following opening address of the chairman.

The CHAIRMAN said—Gentlemen, the subject which was regularly appointed for this evening is one, I think, possessing as much interest for you as perhaps any which could have been submitted to you. It is a matter of great regret that, owing to illness, our friend Mr. Baker, who is always ready to do anything in his power to contribute to the promotion of the useful objects of the Club, is not enabled to be here to introduce the subject on the card, viz., "The best and most economical application of grain to fattening animals, and its comparative value with oilcake, linseed, and other substances used for feeding purposes." I am quite sure you will concur in the single remark with which I will trouble you, that that subject is a most important one (Hear, hear), involving as it does the economical use upon your farms of that which is produced on them, and also involving the question which is as yet a moot one between scientific and practical men, whether malted barley be or be not more useful and advantageous for the purpose of feeding cattle than barley itself (Hear, hear). However, as from the cause which I have mentioned, we are not able to enter this evening upon that subject, the committee of the Club have endeavoured to cater for you as well as they can on this occasion, and, through the kindness of Mr. Cherry, they will be enabled to submit to you a lecture on a subject which I need hardly say is next in importance to that to which I have adverted; for if it be important to know how to feed the animal, it must also be important to know how to rear it and to keep it in health. Unfortunately, the disease upon which Mr. Cherry has undertaken to lecture this evening, viz., *pleuro pneumonia* in cattle, is so insidious, and, at the same time, of so fatal a character, that it baffles the best exertions, and the highest talents, and renders comparatively useless the application of those articles which we should have considered in dealing with the other question which I have mentioned. I am therefore convinced that you will all admit this subject to be an important one; and I avail myself of this early opportunity of saying how much we feel indebted to Mr. Cherry for his kindness in coming forward on this emergency.

Mr. CHERRY said—In proceeding to address you in reference to a disease so devastating as that to which the name of "Pleuro Pneumonia" has been given, I cannot but feel that this may appear presumptuous, when so many talented men have failed to bring forward a remedy whereby the ravages of this disorder may be mitigated; and I feel this the more strongly on account of having been called upon to address you at so short a notice. In the month of April last, owing to circumstances which had occurred in the previous September, I felt bound to tender my services to the Club in relation to this particular question; but several months having elapsed without my hearing anything more of the matter, I concluded that it had dropped, and much of the matter which I had intended to lay before you was employed by me in other ways. Having been called upon, however, by Mr. Corbet, with a view to my introducing this subject, I will now do my best to point out those things which I think essential to a right understanding of this question. In the first place, we must regard it as a political question, involving the well-being of a large portion of the community; not merely affecting those who rear, and endeavour to derive profit from rearing, animals, but also affecting, I repeat, the community at large as regards the supply of food; for if a disease of this kind cannot be arrested, not only will there be loss to the individual who is engaged in the rearing of animals, but to the public, who will, in consequence, have injurious food placed before them. Now this disease, though it is called *pleuro pneumonia*, is only part and parcel of a more general one, and it ought, in fact, still to go under the name "epidemic," which was originally given to it. The disease first broke out in the year 1835; that was the first notice we had of the malady; but it was not till 1840 that it manifested itself among cattle and sheep. Up to that time it had been confined to mankind and to horses. It then went on in its career, and within a year or two after its appearance a type of the disease, which has since been called *pleuro pneumonia*, became prevalent, the disease being principally confined, in that peculiar form of it, to cattle, and not being much spread amongst other animals. But still, if you examine, you will find that the various forms of the disease are all more or less connected with each other; though it may happen that one organ will be more particularly the seat of the disease than another, and though different animals may be differently affected, still the same causes produce these apparently opposite effects, and therefore we must consider these different forms as part and parcel of the same disease. We very frequently find diseased lungs in one animal which is affected, and disease of the skin in another—that the disorder affects the feet of one animal and the limbs of another, but still there is the same general character as regards the nature of the disease, and therefore the same general treatment is required; and unless you take a general view, it will, in my opinion, be vain to attempt any amelioration. The attempt has been made for a long

period to discover a medicine which shall cure this disease. Now, I am convinced that the effort has been made in the wrong direction—that we have looked too much at the means of cure instead of the means of prevention—and that this is the reason why we have failed to discover a remedy. In order that our endeavours may be more successful in future, it is desirable that we should enquire how far we have been right or wrong in pursuing the path of investigation in that direction. Now there are various things to be taken into account in dealing with this important question. We must enquire how far breeding has anything to do with the disease?—how far locality and feeding have a bearing upon it? These are things which have a very great influence on the progress of the disease; and it is in this direction, I think, that we shall ultimately find remedial measures. Now the disease broke out in 1840 amongst our domestic animals. I now exclude horses from my consideration, and confine myself to animals which are reared as stock. The disease then showed forms of a low fever type, and it spread very rapidly through the kingdom, though it came on apparently with so much suddenness. If attention had been paid to the subject at the time, it would have been perceived that the disease had been long lurking in the animal—that there had been oftentimes premonitory symptoms for months. It is to these premonitory symptoms that attention should in future chiefly be directed; for, when the disease has arrived at that stage in which it is frequently found in its more virulent forms, nature has not sufficient power remaining to throw off the malady. The disease is, in itself, a form of low fever, accompanied by depression of all the vital energies. In the first onset there is no particular organ which is the seat of the disease. There seems to be, as it were, a want of vitality in the whole of the component parts of the body. Thus, the disease will go on for an indefinite period, sometimes longer and sometimes shorter, until it attacks some particular organ. You will find the feet affected—that is one of the first forms: or all the limbs will be affected with rheumatism: or the internal organs will be attacked—the lungs, the liver, the stomach, and the bowels. But I never saw any one form of the disease coexisting with another form. Thus, if animals are affected in the feet and mouth, you find the body free from the disease; if the body is affected, the feet are exempt; and so it will frequently run from one part to the other, until it settles in some one point, and this, in the case of the larger animal, the ox, is generally the lungs, and for this reason, that the lungs never know rest. Every other part may have rest, but with regard to the lungs there can never be any repose; they must go on acting, or life ceases in a very few minutes. Then another question of very serious importance is, how far such diseases are hereditary, or rather how far predisposition to them is so. If an animal is born of diseased parents, you find the disease sometimes existing at the period of birth, but generally the disease is not found to exist at so early a period. In this respect it varies in different species; sometimes an animal will go on well until maturity, when the disease will be manifested in a virulent form. There have latterly been a great number of cases of this kind. There has been a predisposition derived from the parents who were in a state of disease; and at last some accidental cause, such as exposure to wet or cold, has come into operation, and produced that form of disease which is called *pleuro pneumonia;* but still, in all such instances, what we witness is the result, and not the disease itself. In the next place, it is a very important inquiry, How far breeding in-and-in affects this question? It has, I think, a good deal to do with the disease, for although it may appear that by crossing with a superior animal you will produce an animal of a superior shape, yet the first point to be considered is not the shape but the animal life; the form is but a secondary matter. I think this is borne out in some measure by the fact of the disease having gone on so long, and at a period when our flocks and herds were in the main arriving at a much greater approach to perfection than they had ever attained before. It is, indeed, true that our highest breeds, taking them altogether, have been most free from the disease; but this is accounted for by the fact that more care has been taken of them, and they have been kept in greater comfort. This has, in a great measure, counteracted the debilitating causes which have operated in other cases. The treatment to be pursued in all cases of this nature is a matter of great importance. We know very well that large masses of recipes have been given for the cure of the disease; they have, however, nearly all failed. I shall not now go at large into the medical question, but I will proceed to the question which I raised before, and inquire whether, by the adoption of remedial measures, the disease may not be rendered much less virulent than it has been heretofore. With regard to animals, we see them at present in a state of semi-domestication. They are not placed in that position for which nature designed them. If an animal were left in the state of nature, where there was a wide range for it to roam over, you would invariably find that in cold or wet weather it would seek some sheltered spot; but an animal which is confined by hedges and fences cannot do this, and consequently is placed in an inferior position. Moreover there is a disposition in animals to seek for different kinds of food at different periods: at one period you will find them disposed to crop trees, whereas at another they will not touch them. This is an instance of what we call the instinct of animals, but it is in reality a very close approximation to reason, nature giving animals a disposition for that particular kind of food which is best suited to their condition. Now, in a confined space the food which animals would naturally seek is not within their reach, and hence they frequently suffer from taking food which instinct tells them is not suited to their condition. Again, we find diseases of an epidemic character more prevalent in wet and marshy situations than in dry ones. You do not find the same amount of disease on high and dry lands as you do on low and marshy lands, and this difference arises from the fact that animals cannot bear wet and cold, which depress the system to a very great degree. The question of breeding in-and-in is one of great importance.

Nature herself clearly points out that such a system ought not to be carried out to any great extent; for if we look at things as they are, we shall scarcely ever find animals of the same family procreating together: generally speaking, they separate, and in fact they have, except in a state of confinement, a repugnance towards each other. Whether or not breeding in-and-in is now generally carried too far, is a question into which I will not now attempt to enter. With regard to the condition of the animal in a diseased state, it is one of low fever, a want of animal life. The question to be considered is, how this is brought on, whether by the peculiar state of the atmosphere, over which we have no control, and which we cannot properly understand, or by other causes over which we may exercise control. In the first instance, I was induced to believe that it was a visitation of Providence, and was communicated through the air; but in what way I felt that it was impossible to determine. In many instances, the food on which the animals had to live has been blighted to a great extent. I have seen the blight extending for miles and miles together. It is probable that the two causes went on operating at the same time; in other words, that there was a predisposition in the animal, arising from causes which existed in the atmosphere; while this predisposition was aggravated by the blighted condition of the food on which the animal subsisted. That the disease was of a low character, producing a state of debility, is, I think, manifest from the fact that, any causes of a debilitating nature added very much to its strength, and made the disease worse. Bleeding invariably did so; and at this time it generally produces a similar effect. Purgatives also operated in the same way. Wet and cold, long-continued rain, even when accompanied with warm air, greatly added to the original mischief. In looking at these various points, I think we must go farther, and see how far we can diminish the operation of the disease; whether, by putting animals in a state of greater comfort, by sheltering them more, and by giving them food of a more nourishing description, we shall not to a great degree ameliorate their suffering condition. The disease will remain, for a long period, as it were in a quiescent state. Thus we find that the ox, for example—the ox especially—though it has not been suspected of having any disease, if slaughtered, will sometimes exhibit strong traces of that peculiar deposit, which is one of the most striking characteristics of the disease. We find the skin often partaking of the disease in a peculiar manner; and so attack after attack is made, until finally there is a general break up of nature. It will attack the lungs and the liver, and the membranes of the chest, and all the vital parts of the animal, until the whole are in a state of disease. The attempt to get anything like an universal remedy to meet so universal a disease must, I think, be in vain. Nature has given us a very large laboratory wherein to choose; and she would not have given us so large a laboratory, if she had not intended that every type of the disease should have its appropriate remedy. What is curative in one stage of the disease is deleterious in another. Hence we must not expect to find any remedy which will be universally salutary in its effects. But if we give greater comfort to the animal—if we remove it to some place where it will not be subject to deleterious influences, by pursuing such a course, we shall go far towards the removal of the malady. Looking at the Continent, we find that a disease of a similar character had existed there for a long period, and had, in fact, become hereditary. Now, we know very well that there the same amount of attention has not usually been paid to animals as has been given to them in this kingdom. The result has been that the disease has gone on increasing from year to year, until at last it has become a positively recognised disease, existing as a matter of course; and if we go on in the same way as we have done for some years past, it will, I fear, become the same in this country. That the disease is in itself contagious I cannot for a moment believe; but that the malaria thrown off from a diseased animal may have the effect of producing disease in another animal is, I think, not to be denied. If you take an animal, and place it in a stall-shed, that animal, if in perfect health, will resist for a long period the influences of bad atmosphere; but if he have the predisposing causes, he will soon acquire a similar disease to that of the animals in his neighbourhood. We find that a number of animals placed in the same shed are generally attacked in the same manner; this disease will run rapidly through the whole of them; but no one has ever been able to show that the several animals attacked were previously in good health, and I believe it will generally be found that the disease has existed for a long period before being manifested. I have often been able to trace disease in an animal before he arrived at that state in which the disease is easily recognized. You will, under such circumstances, find the blood of the animal poor in quality, thin, and weak; and this blood circulating through the whole of the system must produce more or less of derangement throughout all the organs. Hence we find a process of emaciation going on in the animals affected—they do not arrive at that state of fatness and maturity which they would otherwise attain; while, on the other hand, though there may be great organic disease, so that the lungs on one side cannot perform their proper functions, still the disease being rendered inert, the animal will go on getting fat. But unless such a condition be produced, it is in vain to attempt to get the animal into the right state. In the one case, you have the disease in a state of quiescence; in the other, in a state of organic operation. There is one thing which will, I think, tend greatly to the prevention of the disease, and that is, the placing them where they will have increased warmth during the cold winter weather, driving them, for instance, at night into the yard; and though, in such a position, they will not get so much food as they would elsewhere, yet, from not being exposed to the chilliness of the night air, they will thrive better during the day, in an open situation, on a small quantity of food, than they would if they were exposed, and in that situation consumed a larger quantity of food in the night. Generally speaking, indeed, animals do not feed in the night; you find them then, for the most part, lying down, and not occupied in consuming

food. The cold and damp winter weather does animals more mischief than anything else. You know very well that if you want to make an animal fat, you generally place it in a situation of warmth; a great deal may, in most cases, be done towards securing that desirable object. It is true that a flock of sheep cannot be continually housed, nor is it desirable that they should be. But they may be driven from an exposed pasture to a sheltered one; they might be driven to the fold yard, and even this would be much better than leaving them entirely exposed to cold and wet. Another point of great importance has reference to manure. We know that the saving of manure is a matter of the greatest consequence; but it is a question worthy of consideration how far it is conducive to health to have the manure in the centre of the homestead, with all the doors open. It may be a question with some whether or not such gases are good for animals, but I should say they are not. I think that if, instead of having doors opening into the yard, you had the paths to the stables and buildings outside, having the muck heaps inside the buildings, the result would be such as to justify the alteration. With respect to the order in which the animals were affected by the disease, I find that the first animal attacked was the horse; the next animal attacked was the pig. Now these two animals have almost ceased to be affected; at least they have not suffered nearly to the same extent as cattle and sheep, and I have no doubt that this arises from the circumstance of their having had greater warmth and shelter, and been less exposed to debilitating causes than either of the two other animals. I have before referred to the fact that animals which are well tended are in a great degree free from the disease, are much less frequently attacked with it, than those which are exposed. We find invariably that the more animals are exposed the more they suffer from a visitation of this kind. I also previously referred to the fact of the disease being the worst in low wet situations. In such situations it is, in fact, almost impossible to remove it. When animals are attacked with active disease, if there have been a predisposing or chronic disease existing in them at the time, provided they are at all fit for the knife, it would be a great deal better to destroy them at once than to keep them, for the probability is that it would afterwards take a very long time to bring them to a similar condition, if they could ever attain it. Again, I would observe that age seems to have no influence with regard to this disease, for you find it attacking all animals, at all periods. Some very remarkable instances of the effects of the disease have come under my observation. I will mention one very curious instance of a flock of sheep which I knew very well, a portion of which were struck in one night when a month gone with lamb. None of the sheep attacked cast their lambs, but at the proper period for yeaning they brought forth embryos, the dead portions remained in the womb. Again, it was found that in those lambs which had been bred in a state of disease, and which had apparently recovered, the disease did not manifest itself perhaps for a year or two afterwards. In like manner the disease would affect calves, and you would frequently have some cases of diarrhœa wholly and solely depending on the same conditions. Now if any means were devised by which such evils as I have pointed out could be avoided, I have no doubt that in that case the disease would not exist nearly to the same extent, and that it would not be so frequently found to be hereditary. Again, you find that the disease, like other hereditary maladies, will pass over one or even two generations, and shew itself in the third. It is in this way that the disease has progressed and is still progressing; and unless means be speedily taken to effect an alteration, it will, I fear, become hereditary. By care and attention, by selecting animals of the best form and the healthiest character, by avoiding, as much as possible, breeding in-and-in, and by procuring stocks from those which have been the least exposed to the ravages of the malady, the disease may be, in a great degree, removed. If animals had a greater degree of comfort, and were free from the action of cold and wet, I am satisfied that in the course of a few generations the disease, if it would not have ceased altogether, would have very much diminished in degree. I think this is shewn by what I have remarked upon with respect to horses and pigs, namely, that we do not find either of these animals now affected with hereditary disease. There have been found a large number of blind animals during the prevalence of the malady in its more acute forms. I believe we may consider that singular deposit which is found in the lungs of the animal as arising from a want of power in the lungs. This may lie there dormant until an exciting cause has arisen, and when suppuration takes place an abscess is formed, but we very often find the disease existing in its original form. Again, in the case of the skin, we find that the hair becomes rough, and as it were dead; that patches of hair come off, blisters arise on the surface, and that the irritated state of the skin is accompanied with emaciation, and frequently ends in death. If you give the animal proper means, he frequently will recover, and become well as a matter of course. In such cases it is vain to apply external remedies, for by so doing you only aggravate the disease, this disease invariably depending on the febrile condition of the whole system. There is another form of disease which reflection leads me to regard as epidemic, and as arising from the same causes as that under consideration. I refer to the disease to which we give the name of small pox. All the cases which I have been able to trace have arisen under circumstances similar to those in which you find *pleuro pneumonia* rife in cattle. We do not find the peculiar type of *pleuro pneumonia* in cattle existing very much amongst sheep; they seem less prone to be affected by this particular form of disease. Why this should be so I can hardly tell you, but such is certainly the fact. Sheep seem more prone to affections of the skin, and to a general wasting of the body, than to disease of the lungs. In the case of cattle, as you are aware, it is the lungs which are peculiarly affected; in sheep it is the general organs of the body and the skin which are attacked. If you expose a sheep to wet and cold, you find that the skin becomes affected as an inevi-

table consequence. I have no doubt whatever that the maladies are kindred ones, arising from the same general condition of the system. Looking then at the subject in these different points of view, to carry out which would require more time than is at my disposal this evening, I think it is well worthy of consideration how far they really bear upon the question. It would be useless, in the case of a disease arising from such a variety of causes, to prescribe any universal mode of treatment. The treatment which would be right in a low and damp situation, would not do in a high and dry one; and hence the treatment should always be regulated in a great degree by the particular nature of the locality. With regard to treatment generally, it is so complicated a matter, requires so much watching of the operation of the remedies, that I should not be honest if I were to advise you to take the matter into your own hands: I am persuaded that you would thus, in the majority of cases, do more harm than good. But with regard to the other means—the means of prevention—those do come within your province, and may, if properly applied, not only mitigate the disease in the animals attacked, but in a great many cases actually save animals from its influence. With respect to food, I would observe that that which is grown in low and wet situations is apt to produce disease of a similar character to that which I have described, and it is of course necessary that warmth should be more attended to in such situations than in high and dry ones: and I have very little doubt, that after such a summer as we have had this year, after so much rain has fallen, and with the prospect of a cold harsh winter, the disease will be more prevalent even than it has been, and you must look forward to greater losses than you have hitherto sustained. I would therefore suggest a resort to sheltering, as much as possible, as a means of preventing the ravages of the disease. As regards food, in the first instance, where there is any disposition to inflammatory action, it is desirable that the animal should be kept on soft food till the evil has subsided: generally speaking, however, food of a nourishing character will be found the best, and this, if given at an early period, will very frequently be found to have arrested the disease; for it must be borne in mind, that at first the disease is not of an inflammatory character—it is one of low type, requiring stimulants rather than depletion. It would be infinitely better to seek the assistance of one who has been in the habit of attending to the disease, than to go on tampering with it without the proper means. Long experience has convinced me that a great many more animals are lost by an indiscriminate resort to the drug shop than from the natural operation of disease itself. Every druggist has a nostrum for all the diseases to which all the animals in his neighbourhood are subject. It very frequently happens, however, that this nostrum given is a poison in direct opposition to the real wants of the animal. I will mention one instance of the kind, showing what is done by the application of such nostrums: the case was one in which death ensued in a few hours. A cart-horse was supposed to be attacked with cholic, and a supposed infallible remedy was given through the right nostril. In the course of a few hours the animal was in the agonies of death. After death had occurred, the whole of the lungs and the membrane of the windpipe were found entirely stripped. The animal had, in fact, literally died from suffocation, as the result of the application of this nostrum. The case is, I am persuaded, by no means a solitary one. Again, when an animal has suffered in lambing or foaling, it is by no means uncommon to pour burning matter into the excoriated parts: this is done with the idea of giving relief. The question with regard to such treatment is not how many animals live under it, but how many die under it. It is always bad to tamper in such cases. I say this more as a caution than for any other object. In the great bulk of instances it will be found that if proper attention were paid to the condition of the animal—if, when an animal was found looking rough in his coat, or beginning to loiter and keep away from his companions, it were at once concluded that something was wrong, and the animal was at once taken away from the rest, sheltered, and nourished, he might in the course of a few days return in comparative health. It is vain, however, to leave these things to the shepherd or the herdsman; from this cause it is that the disease has been propagated, and has gone on until it has reached the present point. An eye a little more interested and quicker than that of a servant is required to carry out what is needed. I would further advise you not to resort to anything in the shape of purgatives; for I am persuaded that they must be highly injurious to the animal, and you ought not to allow the animal to get into that state in which such applications are required. The first condition of the animal is a general derangement of the whole system, arising from the causes to which I have alluded; and if this were watched, there would be no necessity for the great number of medicines which are given, nor would the animal die from disease. As a matter of course, the greatest amount of disease will be found to exist at those two periods of the year when the greatest change takes place in the animal, viz., the spring and the autumn. During the middle of the winter an animal is much less susceptible to disease than during the warm and muggy months of the latter autumn; for it is notorious that at that period of the year they are shedding their coats, and preparing for the change of season; and of course when there is the greatest liability to disease, there should also be the greatest attention to the comfort and general condition of the animal. One thing which would, I think, be found very beneficial, is the giving of bean meal to cattle. Such food is of a very stimulating character, and may, in fact, be put down as one of the best tonics we have; that is, in cases in which animals can be induced to eat it, for, generally speaking, animals do not thrive well by taking nourishment which is contrary to their inclinations. Care should be taken to give them only food which is not repugnant to them. A change of food is frequently requisite: as soon as animals have become tired of one form of food, another should be given to them. It may be advisable to blister the sides when you find that there is any improper action going

on. Up to the period when the lungs begin to get flooded, such treatment may do good; but when they have lost their power, death will ensue, and it generally takes place within a few hours. I have thus endeavoured to draw attention to those means which I consider most requisite for the amelioration of the malady; for as to attempting anything like a positive cure, in an advanced stage of the disease, I think that any such attempt is entirely hopeless; in such a case our object should rather be to make the most of the animal. The question is altogether one of too much importance to be disposed of in a summary manner, or in a single lecture; but I trust that I have started some points which may hereafter be taken up with advantage to the whole community. I have before remarked that we must not attempt to remove, by any particular treatment, a disease so widely spread; it is only by carrying out a general plan that we can hope to arrest it. Again, another thing which might be attended to is the removal of flocks and herds to fresh places; as, for example, from the valleys to the hills. By thus making a change for a time, we may in the end entirely stop the malady. Whenever you can get animals old enough to breed free from the disease, old animals are preferable to young ones; old animals being in general much more exempt from a predisposition to this disease than animals which are younger.

A MEMBER here asked whether it had occurred to the speaker to make any observations with regard to the unwholesomeness of diseased cattle as human food.

Mr. CHERRY: In reply to that question, I would observe that, in the advanced stages of the disease, cattle become unwholesome as food, inasmuch as they do not possess the full quantity of nutritious matter. It is impossible to condense everything that could be said on so important a question into a short compass; but, with respect to food, I have several times observed, in eating, that the animal from which the meat was taken was evidently suffering from *pleuro pneumonia*. The meat had lost its redness of colour; it had, in fact, lost its general character: it was soft, tasteless, and flabby, not having the taste of meat; and, moreover, my digestive organs told me that all was not right. In the diseased state of the animal, the liver is generally found gorged with blood and bile; the lungs cannot perform their function of throwing off the morbific matter, and the other organs have to perform double duty.

A MEMBER: It arises from inflammation.

Mr. CHERRY: No; we must draw a distinction between engorgement of blood and inflammation.

Mr. F. HOBBS: As a member of the committee, I feel much indebted to Mr. Cherry for having come forward to introduce the subject of *pleuro pneumonia*; and I feel persuaded that the members of the Club present on this occasion entertain a similar feeling. I quite agree with Mr. Cherry, that the subject of *pleuro pneumonia* is one of vast importance to the country at large; it being now generally admitted that more animals die from this disease alone than are imported into the country under the tariff. Under such circumstances, I cannot but regret to hear the opinion of Mr. Cherry, that unless some extraordinary measures are taken, the disease is likely to become hereditary among the breeding stock of this country. I quite agree with him that the evil is a very fearful one. He has thrown out many practical hints to farmers with regard to its prevention. I did not expect that he would say much with regard to cure. I, for one, cannot but think that very great benefit would result from the taking of proper precautions in spring and autumn, when such great changes take place in the animals themselves, as well as in the general state of nature. I do not believe that any of us pay that attention which we ought to pay to keeping our animals warm during the autumn and winter months, particularly at this period of the year. We seem rather inclined to allow them to remain upon low, marshy, and swampy land—I suppose, because there is a little feeding going on there—than to remove them to drier land, and there give them a little food from which they would derive greater benefit. I quite concur in the remark of Mr. Cherry on that subject. It is my firm belief that the more attention we pay to the warmth of our animals, and to the adoption of improved methods of constructing farm buildings, the less food animals will consume, while at the same time they will flourish much more than they do under the present imperfect mode of management. I think that if farm-yards were covered in more than they are at present—which alteration would not be found so expensive as the public generally consider—it would be exceedingly beneficial to the animals. I do not exactly coincide with what fell from Mr. Cherry with regard to the injuriousness of manures in farm-yards. I admit that if manure be allowed to get into a state of fermentation and decomposition, it must be very prejudicial; but, under the modern system of feeding, it undergoes a process of treading, which gives to it solidity, and keeps it in a proper state without any ill effects arising from it. Even if any ammonia should escape from it, the ammonia can now be easily fixed by means of those disinfectants which are within the reach of the practical farmer. I feel confident that no evil need arise from the manure like that supposed by Mr. Cherry. I am very glad that Mr. Cherry has called attention to the comforts of animals, for hitherto we have certainly, as a body, not paid that attention to the matter which it deserves. In the first place, I think many farmers have not those conveniences on their farm premises which are requisite for the purpose. Their landlords have not given them that accommodation which modern improvements in agriculture require. I do hope that before long the legislature will take up the subject, and that farm buildings of a better description will be constructed; but if the tenant farmer has to erect them himself, he will be allowed to remove them from his occupation, or else receive compensation for what he has done. With regard to pigs, in which Mr. Cherry says the disease is not so hereditary as it is in cattle, though it is true that my own pigs have suffered very little, I am far from thinking that exemption is the general rule. I think that where *pleuro-pneumonia* shows itself in the lungs of cattle, or the epidemic among sheep, pigs have gene-

rally suffered quite as much as the other animals on the farm. It is frequently owing to want of attention to cleanliness that the disease shows itself in its more virulent forms. I do think that sufficient attention is not paid to the character of the food, and Mr. Cherry is quite right in saying that the disease is likely to prevail more than usual during the winter, on account of the inferior quality of the food to that of previous years. In going through the turnip fields and amongst the mangold-wurzel, I have observed that the food of this description is not of so good a character as in former years, and for this reason it behoves us to be more careful than usual as to the food which we give to animals, and as to a proper supply of warmth. I repeat that I for one feel particularly obliged to Mr. Cherry for having introduced this subject on so short a notice, and we shall always be glad to listen to his remarks on the same subject.

Mr. CHERRY: Mr. Hobbs seems rather to have misunderstood my remark with regard to farm-yards. I did not mean to apply my remark on the subject of manure to box-feeding, because, as he justly observes, while the manure is trodden in a compact manner, it remains unfermented. What I referred to chiefly was manure placed, as it generally is, in a hole, where the farm-house itself is built, as is generally the case, in a valley. This observation applies to almost all parts of England: you find all the doors opening inwards, and the air is of a very impure character. You may expose animals to the effluvium arising from decayed animal matter with much less serious consequences than are incurred by exposing them to the influence of vegetable matter. It is notorious that horse-slaughterers and butchers are generally healthy men: go into a slaughterer's yard, and you will find those employed there robust and healthy in appearance—that is, provided they are not gin-drinkers; whereas, if you expose the very same men to the influence of decomposing vegetable matter, they will soon suffer, and perhaps die. With regard to pigs, I would just observe that I did not mean to say that pigs are less prone, naturally, to contract this disease than other animals are, but that they are less prone than either cattle or sheep, simply from the circumstance of their being more under shelter. If you observe pigs, you will generally find that they prefer getting into the driest part of the yard. Oxen and sheep, being more exposed than pigs, suffer more.

Mr. TURNER, of Croydon: Mr. Cherry has stated that he conceives *pleuro-pneumonia* to be a fever of a low typhoid character. I think he is right in that view; and I think that when you all attend more to the comfort of your animals, in the manner recommended by him, you will find your account in it. Supposing he is right in thinking that these animals are all struck with a low typhoid form of fever, then the depletive remedy is of course always inadmissible. But I take it that many animals are struck, while in full health, with a different form of disease, attended with disturbed breathing; and in such cases I think you would be doing right by applying the depletive remedy. When animals exhibit premonitory symptoms of an inflammatory nature—for instance, sore throat—the depletive remedy, as a counter-irritant, would be of very essential service; it might actually prevent the malady from travelling down from the throat into the bronchia and the important structure of the lungs. I keep a little stock of my own, to which I attend myself. I watch the animals very closely; and I am satisfied that there are premonitory symptoms which should be met by the attentive principal, and not by the meddling servant; and when the attentive principal discovers that he has got an animal in that condition, he will call in the scientific man, instead of depending upon the herdsman, or upon the quack, or upon the nostrum that destroys; he will, in short, call in the aid of the first veterinary surgeon in the locality. Now I agree with Mr. Cherry that we have gone on too long breeding in-an-in, and I also agree with him that low, damp soils and improper food tend to increase the mischief; but still I maintain that in some instances the disease, instead of being of a low, is of an inflammatory character, and it should then be met by the remedies usually resorted to in such cases; and, while you are adding to the comfort of animals, do not lose sight of ventilation. Give them, also, a right aspect; do not let them have a north-easter, but let them have a dry atmosphere, the wind proceeding from the right quarter. I should only fatigue you by going more fully into the subject, but I cannot too strongly impress upon you the necessity of attending to the earliest symptoms of the disease. There are certain noises which animals make at its commencement, and it is then that judicious treatment is most valuable; it should then be left to the acumen of the scientific man to determine whether the animal should be medicined, or whether it should be left to the *vis medicatrix naturæ*. In conclusion, I would observe that it is a matter of moment, when animals have been struck with disease that they should be removed, if possible, to another locality, and placed in another situation.

Mr. CHERRY: I quite concur in the remarks of Mr. Turner as to the general treatment of animals. I did not attempt, in my short address to you, to go into those questions which are generally understood; my object was to draw attention to those points which I conceived had not hitherto received sufficient attention. There may be cases of so aggravated a nature that bleeding is absolutely requisite; but I have endeavoured to generalise, looking at the average condition, and not the particular instance. With regard to the removal of the animal from an unhealthy locality, I think the desirableness of such removal is too generally admitted to require any comment. The question of farm buildings and tenant-right, adverted to by Mr. Hobbs, does not fall within my province; and even if they had done, I should still have felt that I could not possibly leave them in better hands than those in which they are placed already.

Mr. FIELD: Being possessed of a little land, with a few cattle upon it, perhaps I may be allowed to make a few remarks on this subject. I certainly have found counter-irritants of great benefit when applied to the

chest and to other parts of the animal; and as regards removal, whenever the disease has broken out in any particular part, I have removed animals to another part, and have at once set about removing the chain of communication. Again, when I have found anything like a cough, I have taken blood from the animal—a smaller or a larger quantity, according to the circumstances of the case. I think you may all judge, as you go round to visit your stock, whether there is anything wrong as regards their coats. Perhaps it may be well, under the circumstances, to administer something of a stimulating character. Perhaps ether would be beneficial; but I do think that there is very little distinction, in this respect, between the ox and the horse, the same remedy being, in fact, applicable to both. I have certainly seen cases in which counter-irritants have been applied with much benefit, that after a time the animal has returned to his companions as well as he was before being attacked. I do not think that every animal attacked is to be looked upon as lost. It is not to be supposed that, if medical aid be resorted to, the animal has no chance of recovering.

Mr. Gabriel: Bad atmosphere, a predisposition on the part of the animal, and other causes, have been assigned as producing disease; but I am disposed to think that the principal cause is the want of proper care and attention on the part of the cattle proprietor. Until you get cattle proprietors to be cattle men, in the same way as the owners of horses are horsemen, you will not find that attention paid to them which they deserve. If a proprietor saw his favourite hunter ailing, he would not proceed in the same manner as the cattle-dealer does. If his horse gave but a single cough, what would he do? Why, he would alter the temperature; he would throw an extra rug over the horse's quarters, and bandage his legs; he would make an entire change of diet (I am not now speaking of the medical man, but of the owner of horses), and give him a better description of food. By this means, and by the application of popular remedies which are resorted to in the stable, things incident to the disease are got rid of which might otherwise have led to fatal results. Nothing of this kind, however, is usually done in the case of cattle: the utmost which is thought of when an animal is discovered to be diseased, is to put him under proper shelter, and possibly to give him a drench; he is then left to take his chance. It is never ascertained whether or not the required effect has been produced, whether the seeds imperceptibly sown have been got rid of, or are leading to their ultimate results. In the stable the animal is not put to his usual occupation until every symptom of disease has been eradicated; and if we take the treatment of the horse on the one hand, when labouring under incipient disease, and the case of cattle, on the other, when that disease has actually commenced, can we feel surprised at the one being kept in a state of comparative health, while the other suffers to such an extent?

Mr. Ellman: Unless I misunderstood Mr. Cherry, his object was to direct our attention rather to the prevention than to the cure of the disease; and it is necessary for us, therefore, to confine ourselves to that point. I fear that the veterinary art has not reached that eminence which would justify us in expecting relief. I have had the misfortune to call in professional aid in several cases with regard to sheep, and I must say I have found more benefit from attending to the advice of my shepherd than from all the instructions of the medical gentleman. I do not at all wish to disparage veterinary science, or the eminence of those who are engaged in it. I merely make the remark lest gentlemen should put their whole trust in the science and disregard practice—altogether disregard the attention which it is so necessary for the herdsman to pay to the animals attacked. I have myself studied the nature of sheep a little, and I assure you that the difficulties which I have experienced are so great, that I cannot suppose that any light exertion will overcome them. In the first place, no animal is so inflammatory as the sheep, and none is less tenacious of life. Some years ago I recommended the Council of the Royal Agricultural Society to pay more attention to the subject of the diseases of sheep and cattle. I believe the subject has since been taken up by them, and I doubt not that very great benefit will arise from the pursuit of that study which a very short time ago received so little attention. I hope we shall remember that we ought not altogether to pin our faith to science, disregarding the practical man—the herdsman or the shepherd. Such persons have seen more of animals than we have done, and they have paid close attention to diseases whenever cases have come under their hands. Although science may in a great measure assist us, if we were entirely to abide by what we hear from scientific men, we should certainly be led into errors. With regard to the observations of Mr. Cherry, as to the changing of the animals' situation, I doubt whether much benefit would arise if the change were made suddenly. I have found that the removal of sheep in a healthy state from one farm to another, although the distance was not more than a few miles, has had the effect of throwing the animals very much out of condition, weakening instead of strengthening them. We must remember that an animal will generally thrive much better where he is accustomed to graze than under a sudden change. I doubt, too, whether it be necessary to keep sheep and cattle under cover. My own impression has led me to the belief that greater losses may be sustained through confining cattle and sheep, and thus making them, as it were, tender, than through their exposure to the action of the atmosphere. At the same time, I admit that proper precautions should be taken to give animals all the shelter that can be afforded without actually placing them under cover. The Chairman will remember the case of a person residing in the neighbourhood of Reigate who kept his cows under cover; notwithstanding which, the *pleuro pneumonia* was introduced among them, and he lost fifteen or twenty; while the cows belonging to his neighbours, which had been exposed to the atmosphere, were comparatively exempt. No other person in the neighbourhood suffered so much loss as this gentleman who had taken such pains to avoid loss. I have found that sheep kept in the best condition and

well housed have been equally afflicted with sheep which have been less fed and more exposed to the inclemency of the weather. With regard to the assertion that the three diseases, the common epidemic, *pleuro pneumonia*, and the small-pox, are in reality the same, or have originated in the same cause, I very much doubt that such is the fact. It may appear presumptuous in me to differ from Mr. Cherry; but I am anxious that we should take a wide field of enquiry, and endeavour to arrive at some useful result. I perfectly agree with him as to the desirableness of endeavouring to prevent the disease from attacking animals, at least in its worst forms, by feeding them properly; not by overloading their stomachs, but by giving them food which will have a beneficial effect. But with respect to the three diseases, I doubt whether they are one. One of them is certainly infectious, and not contagious; the other two we may consider as both contagious, and I believe that one of them is infectious. That, I apprehend, is the general opinion of professional men; and I doubt very much whether the cause of one disease has anything to do with the cause of the other. But most persons will, I think, agree with me, that although these diseases did not originate in the same rank, they all had their origin pretty nearly in the same place ("Hear, hear," from Mr. Hobbs). These diseases were not natives of England (Hear, hear). I am not going to enter into politics, although my friend Mr. Hobbs would entice me into doing so; but still I think the great object of the farmer should be, if possible, to eradicate the disease, and I do not see how we are to remove so enormous an evil unless we do strike at the root. Whence it came I would have it sent back again (laughter). I really do not see how we could possibly do better than by sending all our diseased sheep and cattle over the water; especially as Mr. Cherry tells us that unless the disease be removed, it will soon become hereditary in our native animals. If we could in any way eradicate it, I need hardly say we should be doing a great service to the country, and saving a great number of persons from ruin. When I tell you that I have known instances in which the amount of loss has reached 60 per cent., you will, I think, agree with me that the evil is one of no trifling extent. It is enough to frighten anyone who keeps three or four thousand animals. Let me repeat the expression of my hope that farmers generally will not disregard the advice of the shepherd and the herdsman, for they may depend upon it that such men often know a great deal more about the diseases of cattle and sheep than a whole veterinary army. I have employed a person of great eminence in that line, and I have generally found his remedies unsuccessful. My shepherd has said to me, "There, Sir, I have always told you that when you call in a doctor your sheep are sure to die" (laughter). I do not mean to say that there is no case in which it is desirable to call in a veterinary surgeon, but I may at least say that they are not so clever as they think themselves. I make these remarks simply to caution persons against supposing that you may safely disregard altogether the advice of a shepherd or herdsman. I have suffered very much indeed from supposing that I knew better than my shepherd. The result has generally proved that though I knew more of science than he did, he was better versed than I was in practice. Let me say, in conclusion, that I hope that when the subject next comes before us we shall be able to arrive at some decision as to the means of getting rid of this horrid disease.

The CHAIRMAN: I must say that this question has terminated as I thought it would terminate—just where we began. I have from peculiar circumstances, during the last four and a-half years, had my attention especially directed to the consequences of this disease, not in the practical way spoken of by our friend Mr. Ellman, nor in the scientific manner of the gentleman on my right (Mr. Cherry), but it was thrust upon me by my being placed in a position in which I was interested, with others, in endeavouring to protect parties from the consequences incurred by the losses resulting from this disease. I recollect that Mr. Hobbs was present on an occasion, a year and a-half ago, when I took the opportunity of challenging two of the *élite* of the veterinary profession, at a meeting of the Royal Agricultural Society, to state what we were to do to get rid of or cure this disease. Professor Simonds and Professor Sewell both arrived at a conclusion very similar to that at which we have arrived this evening, viz., that if we could discover the existence of the disease before it had reached an advanced stage, we should have some chance of conquering it. I very much fear that little short of the animal being enabled to speak, and thereby inform us the moment it felt the least pain, would enable us to deal with the case (Hear). From all the attention which I have been able to give, and all the information I have been able to obtain on the subject, I cannot but doubt whether in any instance in which this disease has positively shown itself, it has really been cured. I should be sorry to have it go forth from this place uncontradicted, that the farmers of this country generally are so fortunate as to have a class of shepherds so talented and successful as Mr. Ellman's. I verily believe that if he is so fortunate, similar good fortune falls to the lot of but very few. I should be the last person in the world to make the slightest remark to detract from the merits of the practical man. The practical man, above all others, in every department of life, from the highest to the lowest, is the man for whom, in his own peculiar vocation, I entertain the greatest degree of respect. But if I am speaking of the treatment of disease in an animal, I can no more call the shepherd a practical man than I can, in the same sense, call the nurse practical who attends the patient on the sick bed. In my opinion, the practical man is the man who, having devoted his time and talents to the investigation of the nature, character, and treatment of disease, has, in the exercise of his profession, become practical through the experience which he has obtained. I do trust—and I am quite sure that neither my friend Mr. Cherry nor my friend Mr. Turner will think that I would utter a syllable with the intention of detracting from the merits of their profession—but I do trust that the time will come when that blot upon their profession, in respect to their want of knowledge in the treatment of

the diseases of sheep and cattle, will be removed. I know perfectly well that the disease more particularly under consideration is of a peculiar character; and I feel strongly, and every day more and more so, that there are circumstances connected with the treatment of cattle which throw immense difficulties in the way. I feel quite sure that while we are told that under certain circumstances the most should be made of an animal by the short cut of the butcher's knife—while that continues to be considered the best remedy, it cannot be expected that the same attention will be paid by professional men to the diseases of cattle as is given to the diseases of the horse—a valuable animal while it remains alive, and a perfectly valueless one when treated in the same way as the bullock. The observations of Mr. Cherry as to the origin of this disease were, I doubt not, perfectly correct; but, nevertheless, I must say it seems to me that it is wrapped up in a degree of mystery hitherto perfectly inexplicable, its origin being entirely hidden from us. It is perfectly true that when an animal is perceived to be disordered, the remedies recommended—warmth, additional care, change of food, and medical treatment—are most desirable; and we are naturally led, on general principles, to say, that the sufferings of animals are, in some degree, attributable to the conduct of those who do not take better care of their stock. But we are sometimes told that by such treatment animals are made too tender. Our friend Mr. Cherry used the word semi-domesticated, observing that animals were removed out of their proper sphere. Now it does so happen that having been brought up in a district in the west of England, which was, if I may use the expression, the least respectable part of the country, as regards the care of cattle, where the cattle were suffered to be in the fields all the year round, having no such thing as cover or hovel to shelter them; having witnessed that treatment for several years, I never heard of such a disease as *pleuro pneumonia*, much as they were subjected to what we call ill-treatment: the disease was not known. It is very remarkable too, that the animals which are most affected by this disease, with the exception of cows in a cold, wet, undrained dairy country—are feeding stock, I say, the animals most affected are the hardy stots brought from Scotland. I may be told that it is the exposure to which they are subjected in that country which is the cause of this disease. If this be so, I ask how is it that the disease did not make its appearance before. Those who have seen an excellent series of articles which appeared in the *Veterinarian* six or seven years ago, will remember that in them was traced the history of this disease in its progress throughout Europe, travelling westward, like the cholera, till at last it arrived in England. There, too, you will find an account of the very first case which occurred in Norfolk, and ever since that period the disease has been brought into that county, with the cattle which have arrived from Scotland and Ireland.

Mr. Fisher Hobbs: And the Dutch cattle (Hear, hear).

The Chairman: I am much obliged to my friend Mr. Hobbs for reminding me of that importation; but I do not wish to introduce politics. I think it was in 1838 or 1839 that the first case of disease appeared in this country; and though I am not going to apologize for the new tariff, it happens that the disease was introduced before that tariff was established. I think, therefore, that the disease can hardly be traced to that. Hitherto we have none of us arrived at anything like a satisfactory conclusion as to what is the cause of the disease. It has been said that when you find the animal diseased you should treat him with the same care as you would treat a horse; but what we want to know is how the disease comes amongst us, and my opinion is, that so insidious is its character that until you discover and remove the cause you will never be able to effect a cure. Mr. Cherry says it has affected sheep and pigs. With respect to sheep, I would ask are they more exposed than they used to be? Is less care taken of them than formerly? So, also, in the case of the pig: if exposure have brought on the disease, it must be shown that the pig is not so well housed now as he was in former years. My opinion is, that however much we may labour to assign causes for this disease, it is at present just as much beyond our comprehension as the cholera which has recently visited us.

Mr. Cherry then made a few additional remarks, partly in explanation. He said: I did not intend to assign any other cause for this epidemic than that it is, I believe, the cause of all epidemics—something of a predisposing character in the animal itself. I first knew of the existence of this disease in the month of June or July, 1835, in a tolerably centrical situation. On the borders of Oxfordshire and in the neighbourhood of Reading a pony was attacked. I could never trace the origin of the malady, which was altogether peculiar in its characteristics. The first *bonâ fide* case of *pleuro pneumonia* which occurred in England was, I believe, that of a horse, attacked on Brixton-hill—a horse which ran in a Brixton omnibus. The animal was shown to me. After investigating the case, I recommended bleeding; and at the solicitation of the owner I took some blood from the animal myself. One thing which struck me on doing so was the extraordinary appearance of the blood: it had lost its natural character, being like coloured water; and I arrived at the conclusion that the attack was one of influenza. The animal died. Within a few months I had an immense number of cases under treatment. The disease went on until the month of January, when there having been a deep snow, which lasted, I think, for a fortnight, the snow went away, and the disease, which had before been completely isolated, spread like wildfire from one end of the kingdom to the other.

A Member: Are you now speaking of influenza?

Mr. Cherry: Yes; the first origin of this disease. In 1839 I heard of a disease existing in the west of England. The matter was kept very quiet, the malady being almost confined to what was called the fat of Somerset. It went on travelling nearer and nearer to the east; and in 1840 it travelled through Wiltshire and got into Hampshire. In two months afterwards it reached the upper borders of Hampshire, it attacked, not only horses, but sheep, poultry, and other animals. The disease appeared to me to advance in parallel lines, first running in one

direction, and then in another parallel to it, and then branching out, until at last, near the upper part of Hampshire, the lines coalesced, when the disease progressed with fearful rapidity, and within six or eight months it had travelled through nearly the whole of England. The disease is not to be considered as contagious; in fact, properly speaking, it is not contagious. One animal would throw off bad air, which would predispose another animal to take the disease; and from its appearing at first to spring from hill-top to hill-top, I concluded that the disease was in the atmosphere. There was one observation of Mr. Ellman's which I must say I was very sorry to hear; I refer to that in which he placed shepherds and herdsmen above those who have gone through the labour of investigating this disease. Mr. Shaw has complained that this matter is not taken up more by those who belong to the veterinary profession. I, for one, took it up many years ago. There were no means existing for my education in it; but being placed in a sheep district, and being very fond of all the different branches of the art, I paid a good deal of attention to their diseases; and I found, generally speaking, that if a proper course were pursued, out of three animals attacked, one, and in some cases two, might be saved. I am not now speaking of *pleuro-pneumonia*, in investigating which I spent several hundred pounds. It is my conviction that one animal out of three that dies is killed by mal-practice, and I must protest against shepherds and herdsmen being employed to do that which is beyond the routine of their ordinary duties. By their interference at lambing-time, for example, I am convinced they often do a great deal of harm.

Mr. Hobbs said: I cannot help remarking that I consider the remarks of Mr. Gabriel in reference to graziers and breeders of cattle generally rather too severe; and I do think that such remarks require comment. He stated that great blame attached to such parties for not treating their cattle as they do their horses. It should not be forgotten that in many of the grazing districts of this country there are no farm-buildings for the reception of animals, and they are consequently necessarily exposed to wet weather and to an injurious temperature. I quite agree with Mr. Ellman in his remarks respecting veterinary assistance. In the case of horses, the gentlemen of that profession understand what they are called upon to do; but in the case of cattle, it is not uncommon to call in a veterinary surgeon, and incur an expense of nine or ten pounds, when, after all, the animal is obliged at last to be slaughtered. It must be admitted that persons engaged in the veterinary art have not paid so much attention to the diseases of cattle as to those of horses. I trust that this difference will not continue. Those young men who are now being educated need not fear that there will be any deficiency of employment if they combine practice with science. In numbers of cases hitherto, the experiments tried have been unsuccessful for want of such combination. I now feel great pleasure in proposing a vote of thanks to Mr. Cherry for his excellent lecture.

Mr. Pocock seconded the motion, which was carried unanimously.

Mr. Cherry briefly returned thanks.

The members then dispersed.

ECCLESFIELD FARMERS' CLUB.

The sixth anniversary of the Ecclesfield Farmers' Club was celebrated on Thursday, the 19th Oct. The ploughing match for prizes given by the society took place in three fields, on the extensive farm of Mr. Wm. Vickers, of Southey. The entries were numerous. The competitors were divided into three classes, the first of which ploughed in a field of grass ley, the second in a field of clover ley, and the third in a field of stubble. The first class consisted of men above the age of twenty-five: of these there were nine competitors out of fourteen entries. The second class consisted of men above eighteen and under twenty-five years of age: there were nineteen entries, out of which sixteen ploughed. The third class consisted of youths under eighteen years of age; of which six were entered, and four competed. Each man had to plough half an acre, set two ridges, and soil one furrow within four hours. Many of the competitors completed their portion within half an hour of the time allowed, and the whole finished within the time. The judges were Wm. Newham, Esq., of Edlington; Thomas Turner, Esq., of Eastwood; and George Howson, Esq., of Wombwell. The members of the club, to the number of about 100, sat down to an excellent dinner, at the house of Mr. Matthew Stringer, the George and Dragon, Ecclesfield. John Fowler, Esq., the President of the club, occupied the chair; and Wm. Smith, Esq., of Cliffe House, the vice-chair.

After the removal of the cloth,

The Chairman gave—"The Queen," which toast having been duly honoured, he proceeded:—The next toast which I have to propose is the "health of a British farmer and his stock." This toast presupposes some merit, and therefore demands our esteem. He must have some merit, this British farmer, for he has obtained the highest prizes in the kingdom. I give you "Prince Albert, Albert Prince of Wales, and the rest of the Royal Family" (cheers).

The Chairman: I rise now to propose, "Success to the Ecclesfield Farmers' Club," of which this is the sixth anniversary. This little society was first established by four or five spirit-stirring British farmers. They have continued to support the club ever since its commencement, and I may venture to say that we are much indebted to them for the arrangements of this day. I learn from others, as well as from my own observations, that much good has been done by the society in our own townships. Other townships adjoining ours have followed in the train. If I am rightly informed, this club was the first of the kind established in

this district. After ours, the Norton Club was formed; and the Wortley, the Stannington and Loxley, the Whiston, and the Upper and Nether Hallam clubs followed in succession. We would not take credit to ourselves on account of ours being the first established. Some credit, however, is due to the Norton Club for taking a step before us in forming a branch society, for the choice and selection of agricultural implements for the use of the farmers of the district. Much good has been done, and great improvement effected in the management of their land by the clod crushers, drills, scarifiers, &c., which the Norton Club have introduced among the farmers in the vicinity. We also have established an Agricultural Implement Club after the same plan. We have only yet got few implements, but those few have given great satisfaction to those who have used them. Others are now in progress of manufacture. From my own observation in this township, and from what we have seen performed to-day in the fields, I believe that considerable improvement has been made in ploughing. I doubt not you will hear from the judges that there has been a great improvement even since last year. My friend, Mr. Newham, who has been a judge at our matches in previous years, will tell you how far the ploughing has progressed, and what improvement has been made. I may add that there has been of late a far more liberal and better application of tillages on the land in this district. I attribute this to our little agricultural society. In addition to this improvement in the application of tillages, there has been a better regulation of the course of crops. The fallows have been better made; and, above all, there has been a considerable extent of underdraining, which is most desirable, and decidedly the first step to improvement upon wet soils (Hear, hear). These improvements have been carried out in our own township within the last ten years, far beyond what was done in any previous period within my memory. Gentlemen, let us go on with our club; let us call to our aid the most improved farming implements, and if we can raise stronger and more abundant crops, we shall find our reward in it. The only object of this club is the improvement of the condition of the tenant-farmer. The landlord and tenant-farmer are closely linked together, and landlords would do well to encourage societies of this kind, when conducted upon a proper basis. Tenants need not imagine that the object of the landlords in joining these societies is to raise their rents. The object is to produce more from the land. The labourer need not fear from implements being called into use. If we only compare the farming operations with the manufactories of the West-Riding of Yorkshire and Lancashire, we shall at once perceive that, although within the last forty years machinery has been brought into general use in those districts, there are now ten men employed where, forty years ago, there was only one. If we call farm implements into use, it is not for the purpose of doing away with the working man's labour, but that it may be applied to other more useful and valuable purposes. If a tenant farmer, with 200 acres of land, use a thrashing machine, he does not turn away his labourers, but employs them in underdraining his land, in mending his fences, and other productive and profitable employment. I hope every one present will do all in their power to encourage agricultural societies, in order that as much good may be done to each other as possible. With these views, I beg to urge my toast on your consideration. I give you "Success to the Ecclesfield Farmers' Club" (cheers).

Henry Hinde, Esq., said the toast he had to propose in answer to the call of their worthy Chairman, was the health of a nobleman who was largely interested with this district as a landowner. It was "The health of the Duke of Norfolk." It was unfortunate for this neighbourhood that he was not a resident amongst us, because, where he did reside, he took great interest in the agricultural pursuits of the district. He was a large farmer himself, and he permitted his son, Lord Arundel, to cultivate a very large experimental farm upon the most improved system, as a model to his tenants in the vicinity. He wished they had the benefit of this in their own neighbourhood. But, although the Duke of Norfolk was not a resident among us, it must be a satisfaction to those who occupied land under him in this part, that he was represented by a gentleman who equally represented the honour and dignity, as well as the liberty and kindness, of the honourable house, a gentleman who to the shrewdest sagacity adds the highest honour and integrity (cheers). He alluded to Michael Ellison, Esq., the steward who represented his grace in this part of the country. It might not perhaps be impertinent to the subject of his toast if he alluded to what he considered one of the most important considerations that could occupy their attention, namely, the relation of landlord and tenant. It was far from his purpose to underrate the importance of societies of this kind, for promoting improvement in ploughing, and for the exhibition of improved kinds of stock. But it was in vain to look for good servants unless they had clever and intelligent masters, and it seemed to him beginning at the right end to inculcate correct views in the tenant farmer; and one of the most important questions for him, was the proper position he stood in relation to his landlord. For unless the tenant-farmer was in a comfortable position in regard to his occupation, unless he had

security of tenure, so as to place him in a position to cultivate his farm in a beneficial manner, with regard to the future, he (Mr. Hinde) was satisfied he would not do it with advantage to himself or his landlord. He thought the landlord ought to be called upon by the tenant to exercise all those good offices, and also all those encouragements which their relative position imposed. The landlord should take care that the tenant farmer had abundant buildings, of a proper character; that he had permission to remove all unnecessary fences and hedge-row timber; and that he should not eat up the tenant's crops with game (cheers). The landlord should also assist in draining the land, and do whatever else lay in his power for the encouragement of his tenant, more particularly by giving him fixity of tenure, in order that he might be enabled to look forward with certainty to reap the benefits of his occupation. But if, on the one hand, the landlord might be called upon to do all this, on the other hand, he had the right to look to his tenant to perform his part of the contract. He (the landlord) should insist on his tenant maintaining the farm in at least its present condition, or, if possible, to increase its productiveness. He should also do his portion towards draining, remove banks, cultivate waste parts of his farm, uphold the farm buildings, and, in fact, promote by every means in his power the improvement and advancement of the property. He could not but think that with regard to many of the lettings in this part of the country, the philanthropy of the landlord operated in anything but a beneficial manner, either for himself or the public good; that it was, in fact, prejudicial to public and private policy. No one could ride over this part of the country without seeing that many of the farms were not cultivated in the manner they ought to be; that unnecessary fences existed; that other fences were not kept as they ought to be; that many ditches were not cleaned out; that the land was not properly drained; that the farm buildings were not properly sustained; or that property was not made—looking at it in a national view—to produce all of which it was capable. Until they got capital on the land; until they got landlords who were willing to do their part, and tenants were required to do theirs, they might depend upon it they would not see farming advance, and put itself on a par with the other leading interests of the country. Science and intelligence had been stretched to the very utmost to promote all the elements of commercial and productive industry in other branches which occupied capital; but not so, quite, with regard to agriculture. He thought it right, on occasions like these, that subjects of this description should be discussed and handled. It was true they might mature and improve opinion by private discussion and private intercourse between landlord and tenant. But they would never give tone and power to their sentiments, so as to produce the desired effect, unless freely and openly discussed in public. He trusted the time was not distant when farmers would speak out upon fixity of tenure and the other points to which he had alluded. Agriculture was one of the first and most important of our occupations, and he did not see why it should not hold the highest rank among human pursuits. He concluded by proposing, "The health of the Duke of Norfolk, lord of Hallamshire, and the head of the house of Howard" (cheers).

The ploughmen were here introduced into the room; and the names of the successful competitors having been called over, the premiums were awarded as follows:—

FIRST CLASS.

Wm. Rollett, servant to Mr. Wm. Stead, of Owlerton, £2 10s.; Jos. Coldwell, servant to Mr. Jos. Bower, of Owlerton, £1 15s.; Jonathan Bentley, servant to Thos. Chambers, Esq., of Mortomley Lane end, £1.

SECOND CLASS.

Bentley Kirk, servant to Mr. Jos. Stenton, Grange Lane, £2; John Mettam, servant to Mr. Edw. Inman, of Pitsmoor, £1 15s.; Benj. Wastnidge, servant to Mr. Jos. Chambers, Chapeltown, 15s.

THIRD CLASS.

J. Wragg, servant to Mr. J. Newton, Yewtree, Bolsterstone, £1 10s.; Harvey Tingle, servant to Mr. G. Tingle, Haginfield, Loxley, £1 (Tingle gained the first prize in a similar class at Stannington, last week); Benj. Steele, servant to Mr. Thos. Vickers, Southey, 12s.

The CHAIRMAN, after the premiums had been given to the ploughmen, said he had great pleasure in bearing testimony to their very orderly and good conduct during the day. They had each tried to plough in the best possible manner, and most of them had succeeded very well. They could not all carry away prizes; but he had such confidence in the integrity of the judges, that he had little doubt the premiums had been awarded with justice and impartiality. He recommended them to go a step beyond aiming at being good ploughmen. They should strive also to become good stack-makers and thatchers, good workmen in hedging and ditching, and in the general arrangement of the land. While they were serving their masters, they were also promoting their own interests. He assured them that nothing could give greater satisfaction to a master than to observe integrity, industry, and intelligence in his servants (cheers).

Mr. NEWHAM, one of the judges, remarked that what he had to say of the ploughing was highly complimentary to the men. He had not expected

to find the work done so well as it was. He was one of the judges three years ago, and thought the ploughing he then witnessed was good, but he found a great improvement in that which had been done to-day (applause). He hoped they would continue to progress in improvement. Those who had not obtained prizes should not be dissatisfied; for the contest had been a very close one, and they (the judges), from the general goodness of the ploughing, had had the utmost difficulty in deciding which was best. He recommended them all, in their ploughing, to endeavour to fit the fell-furrow in with the others, and take more hold of the last furrow, in order to bring it more on an equality with the remainder. Ploughing ought to be so performed that it was difficult to see where was the ridge and where the furrow. To the two boys, Nos. 19 and 20, he might say that their work was not at all creditable to them. They must endeavour to do better for the future.

The Rev. A. Gatty proposed "The health of Earl Fitzwilliam" (cheers). His lordship might there be regarded in two lights—one as a landlord, and the other as a neighbour. As a landlord, Earl Fitzwilliam was considered most liberal and kind in everything that a landlord ought to be; and as a neighbour, no man could set an example more virtuous and kind-hearted, and more generally an example such as ought to be followed in private life. Speaking to a society of farmers, and being no farmer himself, he (Mr. Gatty) did not wish to get out of his depth. But he was satisfied that of all the occupations of life, except perhaps his own, there was none so important as farming. Earl Fitzwilliam and everybody else must feel that our first wants were supplied from the land. We might do without habitations, and even clothing, but we could not do without food. In this respect there was no distinction between the highest and the lowest, from the Queen on the throne to the beggar on the road-side. Agriculture must, therefore, be the most important worldly occupation which man could employ himself upon. He was satisfied that nothing we could do would render the land unimportant to us. Various things fluctuated in their value; houses fluctuated, railways fluctuated a little (laughter), land might fluctuate to some extent, but we must come back to it at last. Therefore, whether they invested their property in the purchase of land or the enrichment of the soil, they could make no mistake at last (cheers).

Mr. Thomas Foster, surgeon, gave "The health of the Earl of Effingham" (cheers).

On the motion of the Chairman, the following gentlemen were unanimously elected officers of the society for the ensuing year:—

President: W. Smith, Esq., of Cliffe-house. Treasurer: Mr. George Rider, of Greno-house. Committee: Messrs. J. Fowler, Wadsley-hall; W. Greaves, Ecclesfield; George Machin, Ecclesfield; W. F. Dixon; Wm. Stead, Owlerton; Thos. Foster, Ecclesfield; John Rider, Ecclesfield; Hy. Mabson, Ecclesfield; and Francis Wood, jun., Wardsend.

The Chairman said he had to introduce to them a gentleman as secretary, whom it was proper they should know before he was elected. None had had more experience in the society, or afforded greater services to it, than Mr. Wm. Stead (cheers). He was one of those who originated the society; and from its commencement he had been one of its principal supporters. He still continued to aid them with his stirring spirit; and he (the Chairman) hoped he would continue to do so as long as the society existed (cheers). He proposed Mr. Wm. Stead as secretary. The motion was agreed to unanimously.

Mr. Robert Woodcock, of Hazleshaw, gave "The health of Lord Wharncliffe," on whom he passed a high eulogium. That his lordship was a liberal landlord they might know from the fact that he was making a great outlay in underdraining the land of his tenants. He had shown his desire for his tenants to improve their lands by not only finding them money, but also materials for draining. If the tenants would only buckle to, they would see the Wharncliffe estate very greatly improved (cheers).

The Chairman next gave, "Our Army and Navy."

Mr. Wm. Smith, jun., gave, "The County Magistrates" (cheers).

The Vice-Chairman said the toast he had to propose was the health of a gentleman well known throughout that extensive parish, and far beyond its limits. He gave "The health of the Rev. A. Gatty," of whom he could say that the better he was known, the more he was esteemed. The toast was drunk with loud cheers.

The Rev. A. Gatty returned thanks. He was glad he had obtained the confidence, the esteem, and the regard of the very kind and partial friend who had so handsomely proposed his health, because they were well known to each other. It was his misfortune, in so large a parish, not to be so well known to many as he could wish, and to be only so well known, comparatively speaking, to few as he was to Mr. Smith. But he assured them that Mr. Smith only did justice to what he (Mr. Gatty) wished to be, rather than what he was—"the more esteemed, the better he was known" (cheers).

W. F. Dixon, Esq., said the toast he had to propose was the health of an individual whom he had known ever since he, some 25 or 26 years ago,

came into the parish of Ecclesfield. He had known him as an excellent neighbour, and also as an esteemed and intimate friend. He was one of the best practical and experienced farmers in this district, and during the last year, he (Mr. Dixon) might affirm, had given himself great anxiety for the success of the Ecclesfield Farmers' Club. He had performed the duties of chairman with a considerable degree of energy; and he was sure that there was not a more hearty wisher for the success of their club than their worthy President, Mr. Fowler (loud cheers). During the time he (Mr. Dixon) had resided in that parish, the improvement in agriculture had been progressive; and he considered that it had advanced very considerably. It would, he hoped, go on advancing to a much greater extent. He thought that much more labour and capital might be employed in agricultural pursuits in Ecclesfield with very great success to those who employed it (Hear, hear). He concluded by proposing "The health of John Fowler, Esq.," which was drunk with musical honours.

The CHAIRMAN cordially thanked them for the very handsome manner in which they had drunk his health. His worthy friend had said a great deal more of them than he deserved. As far as discharging the duties of the office of president of their society during the past year, he feared he had fallen far below the mark. He promised, on taking office, that he would give them three or four papers; but at one part of the year, his health would not permit him carrying out his intentions. He had, however, in the course of the year, given them two papers, and had hoped to obtain some others from other gentlemen. He had one promised, on agricultural implements, by Mr. Archibald Wilson, who, he was sorry to say, was now no more. The loss of this honourable and upright man would be greatly felt. The paper promised by him was prepared immediately before he was seized with the illness which terminated in his death. Mr. Hinde, who had also promised them a paper, had been unable, from business engagements, to fulfil his promise. He hoped that next year they should have two papers instead of one from Mr. Hinde. In conclusion, he (the Chairman) assured them he would do all he could to promote the interests of their society, which, he was convinced, had effected a great deal of good in the immediate locality (cheers).

HENRY DIXON, Esq., gave "The health of Michael Ellison, Esq." (cheers).

T. D. JEFFCOCK, Esq., proposed "The health of the Judges." He was sure the members of the club must congratulate themselves that they had been enabled to secure the services of three such gentlemen. He believed, if they had scoured Yorkshire through, they could not have found more able, impartial, and efficient men than those who had acted as judges that day (cheers).

Mr. T. TURNER, of Eastwood, in returning thanks, said they certainly had endeavoured to act impartially in awarding the premiums; and he hoped they had succeeded. They had done the best according to their judgment; but the task had been a very difficult one, as many of the competitors had been nearly equal to each other. They had no difficulty in awarding the first prize in each class; but when they came to decide who were winners of the second and third prizes, they experienced considerable difficulty in giving a decision, as they found the work of three or four in each class nearly equal. The work had, as they had heard from Mr. Newham, been generally done well. He could say truly, from his own experience, that there had this year been a very considerable improvement upon the ploughing of previous years (cheers).

A long discussion took place as to the propriety of rescinding the rule prohibiting the winner of a prize in the first class from competing again for three years after receiving a prize. Mr. W. Stead, Mr. T. Turner, Mr. Newham, Mr. Hinde, Mr. Wm. Smith, jun., addressed the meeting in favour of the alteration of the rule; and the Rev. A. Gatty, Mr. Woodcock, and others, against it. On being put to the vote, there appeared 29 in favour of the rule remaining as at present, and 16 in favour of the proposed alteration.

Mr. NEWHAM, of Edlington, in proposing "The successful candidates," took occasion to suggest that the society should in future years give premiums for the labourer who had lived the greatest number of years with one master, and received a good character; and for the labourer who had sent his children to school the greatest number of weeks from one annual meeting to the other (loud cheers).

The CHAIRMAN thanked Mr. Newham for his suggestion, and expressed a hope that the President and Committee for the ensuing year would take it into their consideration.

WM. FOWLER, Esq.: The toast which I am privileged to propose is one which, I am sure, however unworthily recommended by the proposer, will meet with a most cordial and welcome response. That toast is the health of a gentleman who is elected to fill the highest office of this society during the ensuing year (cheers). And when we look to the position of that gentleman in reference to his connexion with extensive landed property in this neighbourhood, to his local influence, or to his attachment to the pursuit of agriculture, and, joined to these, his urbanity of manner and kindness of disposition, I question whether, if we

were to look throughout this extensive district, we should find any one so well calculated to fill that office as our president elect, Mr. Wm. Smith (cheers). On the other hand, gentlemen, I will venture to say that it would be difficult for him to find a sphere of more extended usefulness than in promoting, developing, and extending the objects of this club (applause). If we look to the advantages which science has in recent years opened up to the farmer—if we look to the changes which recent circumstances have brought about, it is the unquestionable duty of every man connected with the land, whether landlord or tenant, to do his utmost to develop the resources of the soil. Chemistry has shewn that plants are composed of certain elementary constituents, and in order to the perfect growth and development of these plants, precisely the same elements must be found in the soils and manures in which their growth is induced, and in nearly the same proportions. The science of geology, from which we learn the various characters of the soils, has shewn the true principles upon which draining, that most important element of cultivation, may be effectively and efficiently carried out. Although agriculture is the oldest art known, being almost coeval with time itself, these sciences, as applied to agriculture, are but little more than half a century old. How much more, then, must there be to learn (Hear, hear)! If we look to mechanical science, we find that many improvements have been made. It is most important to take advantage of those among these improvements which are most within the farmers' reach. The truth is, that farming must now be regarded and placed upon a strictly commercial basis (Hear, hear). The landlord must undoubtedly fulfil his part. He must offer every inducement and encouragement for the soil to produce its utmost resources. The tenant must undoubtedly bring to his aid an intelligent and unprejudiced mind. He must be willing to take advantage of all circumstances which science has placed within his reach. I do not know by what means he can so readily and so easily obtain such knowledge as by means of such societies as this. Such societies enable parties to bring their practical experience and their acquired knowledge in contact, and thus improvements may be diffused throughout all the members. Without trenching within the magic circle of politics, I would say that if the landlords will perform their part—if they will offer those inducements and encouragements which it is their duty to do, and if the tenant will take advantage of all those aids which science has placed within his reach—if he will exercise industry, perseverance, and skill, and above all, if he will bring a sufficiency of capital to enable him to take advantage of these aids in the cultivation and management of his farm, he may venture to smile at the phantom "protection," and to regard circumstances of recent occurrence not as matter of regret, but merely remember them as matter of history. I believe, when all the advantages I have adverted to shall have been brought to the aid of the British farmer, the foreigner will be unable to compete with him in the markets of this country, and his produce will be allowed to reach these shores merely in aid of the supply required, and only in successful competition when it shall please Him who rules over all to deprive the farmer by adverse seasons of the ordinary results of his science, his industry, and his skill (Dissent from Mr. T. Turner, the Rev. Mr. Gatty, and others). I trust many of us will live to see the time when there will not be throughout this district a wet field undrained, or a superfluous fence remaining; and I trust we shall be able to look back to the days of the Ecclesfield Farmers' Club, and say that it was mainly instrumental in bringing about such results (applause). I can assure our worthy president-elect that we will give him every support; and I hope that when he shall retire from his office, he may be enabled to say that we have assisted him to do that which in after years will be a source of great gratification to him (cheers). [The toast was drunk with three times three.]

Wm. Smith, Esq., the president-elect, after returning thanks, said—I do not feel myself at all flattered by the position in which I am placed, because I feel fully incompetent to fulfil the duties of that arduous situation (No, no). Nevertheless, from a sense of duty and a wishfulness to promote the welfare of the Ecclesfield Farmers' Club, I feel bound to make the attempt (cheers). I regret exceedingly that the gentleman whom you intended should occupy the chair for the ensuing year is no more. Mr. Archibald Wilson was intended to have filled the situation of chairman, and a more competent man could not have been found in this parish or neighbourhood; and I regret exceedingly the cause that has deprived us of the benefit of his services. You cannot expect from me that I should know much of agriculture. I am not a practical farmer, and know very little of agriculture. Nevertheless, from the support which has been promised me here to-day, I feel it my duty to accept the situation to which you have elected me, and to do the best I can faithfully to discharge its duties (cheers).

The Vice-Chairman, in giving "The health of Mr. and Mrs. Vickers," took the opportunity of expressing the thanks of the society to Mr. Vickers for the liberal manner in which he had aided the objects of the society, by allowing his land to be used for the match, and for the attention and kindness with which the men and their cattle had been treated. "Success to the Wortley Club," and other toasts, were given, and the meeting, which was one of the most satisfactory of the society which has yet been held, was prolonged to a late hour.—Sheffield and Rotherham Independent.

TENANT-RIGHT.

REPORT FROM THE SELECT COMMITTEE ON AGRICULTURAL CUSTOMS, WITH THE EVIDENCE.

(*Continued from page* 364.)

Evidence of Mr. WILLIAM BENNETT.

CHAIRMAN.]—You are a land agent and land valuer in the county of Bedford?—I do a little in that way, no very great deal as a land agent; I value pretty much.

You do a great deal of valuation between outgoing and incoming tenants?—Yes.

And you are also an occupier of land?—Yes.

To what extent?—Between 300 and 400 acres only.

How long have you occupied that land?—About 16 years.

In what state was it when you took to it?—It is naturally a weak chalk soil, and was then very poor.

You have improved that since you have had it?—Yes, very much, I think; so my neighbours tell me.

In what way have you improved it?—Principally by artificial dressings for turnips and wheat, and high feeding stock.

Have you increased the quantity of stock upon it?—Very much. I spend as much money yearly for artificial dressings as I pay the Duke of Bedford for rent, in fact rather more; my outgoings for dressings will exceed my rent, one year with another.

When you speak of dressings, do you include the cake purchased for the food of cattle?—No, I include only the interest which I conceive the farm has in that cake and corn; that is, I take it at one-third of cost. I question much whether we do get two-thirds of the corn and cake in the increased value of the cattle that eat it. Mr. Hudson, of Norfolk, takes it at one-half, and one-half he puts upon the improvement of the land; but we should, I think, get in the meat rather more than one-half.

You mean Mr. Hudson, a large farmer in that district?—Yes; he is an excellent authority, and may be right; but I wish to be quite within compass.

Do you give cake to sheep?—Yes, sometimes.

Do you think that giving cake to sheep pays you or not?—There is always one difficulty about giving cake to sheep; that is, the weather very materially affects it in the open districts; you can hardly be safe against the wind and rain, and you get a great deal of cake spoiled by the weather in giving it to the sheep. I have followed more the practice of giving corn to sheep.

That is, you give them hay and a certain portion of corn?—Yes, but I much want to get some malt, more than anything else, to give them; if it was not for the abominable duty upon it, which I think it is about time we had done with now, in these free trade times.

What amount of cattle do you keep upon your farm?—On the 350 acres of land I keep about 500 sheep, about 250 fatting sheep, and the same number of ewes.

Have you any custom of tenant-right for reimbursing the tenants for improvements upon all farms in Bedfordshire?—No; there is no custom that would enable them to claim compensation for artificial dressings or drainage, or anything of that kind, now allowed by law, that I know of; I am not aware of any that have received any compensation in that form.

As a valuer between outgoing and incoming tenants, do you approve of it?—No, if there are any arrangements made between the parties that the outgoing tenant was to receive, or the landlord was bound to pay, we should value it; but in the absence of that, if a tenant was leaving, and was to say, "Why, I have done so and so, I have drained that field two or three years ago, and I have done this and that thing," without anything in his lease to give him that compensation, I should say there is no law to enable a valuer to award it, nothing more than for the acts of husbandry on his fallows.

Mr. NEWDEGATE.] Would you assign compensation for the tillages and drainage under the custom of the country?—No, for tillage only; there is no custom of the country that would warrant it; and the party for whom I was employed would very properly object to such valuation; the custom would not carry it.

CHAIRMAN.] Are you of opinion that the want of this tenant-right acts hardly by the out-going tenant?—Yes; I know many instances in which that has been the case, and some which have occurred within not a great distance from me latterly. It will not be proper for me to mention any names; we do not want to appear to be invidious. I am prepared with a case if called upon; and several cases I could show indeed, in which there has been great hardship, from parties being turned adrift without any compensation whatever of that kind. I know a young man in a neighbouring county; he only had his farm for eighteen months; he commenced in a very spirited manner on that farm; he commenced by buying London manure, and he used rape-cake for his turnips the first year; he sold no straw or hay all the time he was there, though in that part of the country it is allowed upon bringing back certain dressings, but he sold none. He spent about £300 in oil-cake the last winter he was there, for sheep and beasts, and did not know till about the 23rd of March but what he was going on as heretofore. After eating all that cake by his sheep and beasts in the yard, making the manure, he was called upon at six months' notice to quit the farm; I know that to be the fact, and I am prepared anywhere to prove it.

Are you of opinion that the tenant you have spoken of was a considerable loser in consequence?—I am sure he was a loser; and going upon the principle that Mr. Hudson admits, he would lose half the cake in the first instance; saying nothing of the artificial dressings on the land, according to my calculation he would lose full one-third of it.

Have you any other cases of a similar nature to state to the Committee?—Yes; I know a case bearing upon the point showing the necessity for legislation, to give security; showing, I think, that the want of it is most

detrimental to the public. In a case that occurred where I was called upon to value last August, the farmer died in the harvest, and I was sent for to value for probate duty. In going over the farm I stated to the son, "You must excuse me: if you mean to continue living on this farm you must farm better than you do." "Well, sir," said he, "I know we have not farmed in a very thriving state" (the farm was about 700 acres); "you know," he added, "how we are situated, and some allowance may be made for us; this property was put up to tender about three years ago only, and my father, that is deceased, knew perfectly well what was coming on;" it would be put up to tender; and therefore he stated that their only chance of getting the farm again at anything like a reasonable rate, was to have it in such a state that nobody else would take it. That was the observation of the son; "We must have it in such a state that no one will outbid us, and consequently tender for it." My impression is, that that was the only tender there was for the farm; but, he said, "If we were to go to work and improve this farm even now" (the landlord is in France), "we should have no security for it." I do not know how any Member of the Committee would have felt at hearing that, but I felt that I was aground; and I could say no more against that farming: I thought he took a most judicious course; but it is proper to say that that was not in Bedfordshire; I am living upon the borders of the two counties. There are about 8,000 acres upon this estate.

Sir C. LEMON.] For what term was that tender?—It was offered upon a seven years' lease; but the tenant afterwards refused to sign any lease; he was in such bad hands; he is now going on from year to year.

Were those cases exceptions to the general rule?—Yes, I should say they were; the general rule is better than that, there is no question about it; there are many landlords in Bedfordshire, which are as good as in any part of England, and where there is a tolerably good understanding between landlord and tenant; they have gone on for several years so, but still there is not that security for the improving tenant that there ought to be. I could give other instances of the injustice of the present system; I might instance the farm on which I was bred and born: my father came up there about 60 years ago, out of Leicestershire, and took a farm there, and farmed for many years, and during the residence of the landlord the best possible understanding existed. The old baronet used to bring his friends to see my father's stock and his farming, and there was the very best possible understanding between them. It so happened, however, that at the death of the landlord the next heir to the estate had made himself very poor by electioneering contests; he went and altered the terms directly, and my father was put up in rent. He still struggled on; he drained all the farm; or I ought to have said, he had drained it, and had made it capable of bearing more rent; three hundred acres of it was clay land; he had drained it himself. The rent was raised, but still from those embarrassments the next heir, the grandson, never reached the estate at all. The owner died, and the estate was sold. It is true that drainage was not done so expensively or substantially at that time as it has been since, and it required draining a second time; it was drained by my father a second time. The gentleman buying that estate felt justified in ascertaining the full value of the farm, and he sent a stranger over to put a rent upon it, and my father got put up in the rent again; that was the second time, and it was raised very considerably too, while farms on the same estate which were not improved did not get the advance of rent. The valuer looked over the estate, but he did not know who had farmed well and who had not; he merely looked to what a person would give for it. My father got a considerable advance of rent then, still he struggled on, and after a while the steward was dismissed, and on a second steward being appointed another stranger came to value again; my younger brother was in the farm now, my father being dead. There was an advance made then, so that at length the farm was double the rent that it was when my father began with it. That I am prepared to prove; and my brother, as the only mode of saving the little wreck of property he had, at length gave notice to quit, finding it no longer practicable to pay such an amazingly advanced rent upon his own improvements. And I think I could prove that there are some farms in that very parish which are not more than 10 per cent. above what they were 60 years ago, while our farm had doubled the rental. That, in my judgment, shows that there is something required to protect the improving tenant.

CHAIRMAN.] Do not some of your large landowners grant leases as a protection to good farming?—Yes, the Duke of Bedford grants leases, and one or two other owners besides; but leases are not at all general. The Duke grants leases varying, I believe, from seven to 20 years; to improving good tenants that he has proper confidence in, he grants the longer terms.

You still think, as a general rule, that tenant-right in the nature of compensation for improvements is necessary, in addition to a lease?—I think so, to secure progressive improvement, because otherwise it would be unfair. It is more necessary, I should say, to the community than to the tenant, and quite as beneficial to the landlord, to give a tenant-right at the close of the lease, because it prevents the tenants from running out the farm. A man naturally does that more or less (who intends nothing wrong) in self-defence. Unless I had the most thorough confidence, I confess I should cease that heavy expense for artificial dressings, because if a stranger was to come and put a value upon my farm, I should consider I should have to pay an advanced rent upon the improvements I had made upon the farm.

Is a tenant-right at the end of the lease more especially required for the interest of the landlord?—Yes, and the landlord need not be alarmed about such a tenant-right as that. But it could only extend over the last four or five years of the lease, because the lease itself gives a security to the tenant till then, and the landlord would thus have the improvements in the land, and the incoming tenant would be very glad to pay him for the improvements which were made in the latter part of the lease. It would be better to do that than take the farm in an exhausted state.

It would be more expensive to the incoming tenant to take an exhausted farm, and bring it into cultivation, than to pay fair claims for improvements already existing?—Yes; if I was a landlord I would adopt the plan of renewing a lease before it run out; and I do not mean to say but that the landlord might in some cases be entitled to advance the rent, there is nothing to prevent that; but if he come to terms with the tenant, whether at an advanced rent or not, this would settle all claims for improvements. It may in fact be presumed that if a landlord gives his proverty out of his own hands for a number of years into the hands of a skilful man, he does it with a full understanding that his estate shall be taken care of; and then, in all probability, it would be worth more than it was before, more especially if some of the improvements had been effected by the landlord.

Are you aware whether there is any legal difficulty in the way?—Yes, there has been, and it is about time that that legal difficulty was removed. My impression

is, that this bad farming must necessarily go on in a country not producing enough food for the people, and the labourer not employed, so long as we have a mischievous law of that kind. With regard to the law of entail, I think it is time that was remedied. I contend that if an estate gets value received, it is nonsense to talk about injuring the person coming after. If the tenant farms the estate at all well, how can it be injured by that? I do not see why the legislature should demur to a person having property of that description, having a power to lease and give compensation; I cannot for the life of me conceive how that could be an injury to an entailed estate. It might be done on the same principle that there have been powers granted by the legislature to entailed estates in another department; why should not that be the case in regard to this? the future owner would have full value received in the improvements of the estate.

Mr. NEWDEGATE.] You say, "department:" what department do you mean?—I think the Duke of Richmond introduced a bill, about two years ago, relative to entailed estates; I forget what it applied to now.

CHAIRMAN.] Was not it for charging land for drainage?—Yes; I believe it was.

What are your views as to tenant's claims for buildings erected by himself?—I think there is very little difficulty about buildings which the tenant erects for himself; that might be very easily got over. If he erected buildings without the consent of the landlord, I think the most he could in those cases claim would be this: at the end of his term he should be compelled to offer them to the landlord or incoming tenant by valuation; and if they refuse to take them at all, then he ought to have the liberty of taking them away, he not damaging the landlord's property. That is the only common-sense view I think you can take with regard to buildings. It is a very unfair thing that a person may erect a building detached from anything else, for the accommodation of the farm, and not be allowed to remove it when the tenancy is ended; that I think a most arbitrary law.

Is it your opinion, looking to English agriculture generally, that an addition to the existing farm buildings is necessary for carrying out improved modes of farming?—In many instances it is exceedingly necessary, and especially if the system that has lately been advocated, and is gaining ground in the country, that of box feeding, be carried out; very few persons have accommodation for that. A brother of mine has erected a very good building of that kind, in which he has got his copper fixed and his chaff-cutting machine, and the bullock lodges all round the exterior, which cost £200 or £300; that is all detached from anything; and under any circumstances, if the incoming tenant would not take it (he is under lease, and he would have no difficulty with the Duke of Bedford with regard to that; but he ought not in justice to have any difficulty with any one, if the person coming in would not take it), my brother ought to be allowed to take it away.

What is this building made of?—Very largely of larch fir.

Mr. COLVILLE.] Is it in the ground?—Yes.

And irremovable by law?—Yes, and irremovable by law.

CHAIRMAN.] Is it your opinion that a bill might be framed upon this subject without undue interference with the rights of private property?—Yes, I quite think there might, and ought to be. On the subject of leases, I would wish to remark that I stated I farm under lease; but leases in the county are not general; there have been great impediments lately with regard to the taking of leases; saying nothing about the indisposition to grant leases, as to the taking of leases there have been impediments. The uncertainty with regard to the constant alteration of the Corn Laws has been one cause. A person has never known what to expect or what to be at; unless the lease be framed on the principle of a corn rent, he would not know what to take it at. For myself, I have no great admiration, by the bye, of the mode in which that question has been set at rest. It is my opinion that nationally it is a most suicidal act; other countries have not given the *quid pro quo*; we are getting nothing in exchange. There is one other difficulty I wish to mention relative to leases, and it is relating to the preservation of game. I could state a case with respect to that, which has just occurred. I know an estate where the property was lately sold, but the owner gave his tenants a lease before he offered the property for sale; he did it out of the best feeling; some of them had been many years on the estate, and he did not like the idea of their being turned out; he gave them a lease previously to offering the property for sale, and it was regarded as a mark of kindness; but the property has passed into other hands, and it is said that the gentleman who has purchased it is remarkably fond of game. A farmer came up the other day, and said, "We were very proud of our leases, but I wish my lease was at Botany Bay rather than I should have it; because my farm is so situated all among the woods, it will not be worth having if game is preserved on anything like an extensive scale. In the lease the right to the game was secured to the landlord, but we were not afraid of it under the former owner; it was not strictly preserved; there were just a few hares and pheasants, and so on, but nothing like a rigid preservation of the game. But finding from the movements that there is going to be a strict preservation of the game," the farmer said, "I should like to get rid of my lease and send it to Botany Bay;" showing that a lease, under such circumstances, must be a great injury, because it holds a man to the spot, and he cannot help himself, especially if he has got no claim for compensation.

Is not it the fact that in many parts of the country the farmers, under present circumstances, are unwilling to take leases?—From the two causes I assign, a tenant at will is better off if he wants to leave the estate. Supposing, for instance, I take a lease under those circumstances where I had no doubt of being hurt by game, it might occur that the estate was sold, as this estate was, or the manor might be let, and then I might be eaten up, and hence a clause in the lease that was cared nothing about originally, becomes a very serious one. It becomes a question who shall stock the farm the hardest, whether the person having the shooting, or the farmer having the sheep upon it. That becomes so serious a matter that the tenant is no longer safe.

Have you considered the legal difficulties that prevent many landlords from granting agreements with tenant-right?—I have understood as to the law of entail, that there are persons who are subject to a great deal of property, not, strictly speaking, their own—that is, that they have not the entire control of it. They have not the power that I was stating I thought they ought to have. I do not know any other legal difficulties. There is an objection raised upon the ground of its being a great interference with the rights of property. If you take it on that ground it becomes a question as to the rights of property on both sides. I contend that the rights of property as to the tenant are not respected now, generally. There is no right to expect good cultivation without a covenant to improvements, and without a law supporting it. The law would now, in fact, punish a man for dilapidations; but it gives no

compensation for improvements. If I were to let my farm go to waste, I should consider I was liable by law to make compensation for damages done; but that same law does not provide that I shall derive any compensation for the improvements that I make and leave behind.

Are you of opinion that decided benefit would arise to English farming generally from the addition of tenant-right compensation?—I thing that there can be no doubt upon that subject, that giving security to the farmers would induce them to employ a great many more labourers, and would enable them to feel an undivided interest in the farm. The tenant would not be looking to where he was to pitch his tent next. That is a great point. As it has been very properly observed, a man feels interested in everything about him if he has a confidence that he shall not be removed without receiving some sort of remuneration for what he has judiciously expended, and not as yet had the benefit of. I am not an advocate to say that landlords ought to compensate tenants for any amount of money they have foolishly expended; it ought to be left to the parties to say how far a man has made the outlay judiciously, and how far he has received the benefit of it, and how much of it is left for the man who is coming after him to take the farm; I cannot conceive any extraordinary difficulty about the matter.

If it be correct, as the Committee have been informed, on legal opinion, that owners of settled estates are unable to grant, even by agreement, compensation for the improvements unless they are supported by the custom of the country in so doing, is it your opinion that such landlords are under great disadvantage in encouraging their tenants to pursue the most improved methods of farming?—I am quite sure of it, and I feel further convinced that when landlords get thoroughly to understand this question in all its bearings, that there will be a very different feeling on the subject to what there is now. I think that there is an erroneous idea formed as to what is meant by calling upon parties to give compensation; I think it would be found very shortly that the estates were greatly improving in value by it, and that the compensation would be of not less advantage to the owners of the estate than to the tenants connected with them, as well as to the country at large.

Have you had occasion to look over estates and see the farming in Berkshire?—Yes, I looked over that district.

But did you find the farms in general were well farmed, and that the land would have been better for a little artificial assistance?—Yes; the two days I spent in the neighbourhood now referred to, convince me there was a capital foundation on which to build a good superstructure. I thought there might be some fine crops soon produced upon the land; it was land that drank up its own water; it appeared to me to be a grateful soil for what is done to it; it seemed to me to be rather poor, I confess, and greatly to need improvement.

Do you not think that tenants whose landlords are unable to grant this tenant-right for the expenditure on artificial manure, would reasonably think twice before they made that expenditure?—Yes, certainly they would; I have hardly seen a soil where I think it would repay both the landlord and tenant better to go to work very largely with artificial food, and to keep stock highly. The bulk of it seemed to be good stock land.

Was there any portion of the property you looked at there that you thought would be much benefited by marling?—Yes, it seemed to want more solidity of soil; it was too light, and I think I was observing that there ought to be a little tram or rail-road put down to get clay upon the land.

Is it not hard upon the landlord, if he has not the means that are required for carrying on the various improvements at once, that he should be debarred by law from giving to his tenant such compensation as would induce him to do it?—Yes, it is a great hardship, and a great national loss.

What are the ordinary terms between outgoing and incoming tenants in Bedfordshire?—The general bulk of farms are held on a Michaelmas hiring; there are some few held on Lady-day hirings still, but they are generally getting pretty much out; they have occasioned long litigation and a great deal of ill-will. The original system in Bedfordshire was, I believe, a Lady-day hiring, with the outgoing crop; the tenant being entitled to that; but in most instances the practice is now changed into the regular Michaelmas hiring. The tenant-at-will (I am speaking of) would receive notice to quit, of course, by the 25th of March, to leave the next Michaelmas; then he would be obliged, according to the custom of Bedfordshire, generally speaking (though not invariably), to give up his fallows, and a portion of the farmhouse, and a stable for the horses to the incoming tenant, and the incoming tenant would be allowed to come in and sow the seeds himself. I should explain, that what I think prevails now most generally in Bedfordshire is the Norfolk system of allowing the outgoing tenant to cultivate the fallows in the usual way, carrying the manure out and sowing the turnips, cutting the hay, and stacking it on the farm; he has to be paid by valuation for the hay and turnips; they pay nothing more; nothing for manure, except for cartage, however expensive the manure may have been made. In the case I before alluded to, the tenant had to carry this very oil-like manure out without the slightest compensation except for the mere cartage.

You were understood to say that whether the dung is mere straw and water, or enriched by oil-cake, it belongs to the landlord, and that the outgoing tenant has no compensation?—None whatever.

Mr. HENLEY.] What articles do you think the tenant ought to be allowed for; is drainage one?—I think any articles that can be proved of real benefit to the estate and left there, for the benefit either of the landlord or of the incoming tenant, he is entitled to be paid, whatever that is; that he is entitled to be paid for any interest that is fairly left in that land, that he has not had time to get out, whether it be draining, or marling, or chalking, or liming, or artificial manures; and I think that in the event of any legislation upon the subject, the less it goes into particulars the better, because the customs of different parts of the kingdom vary so much; I think the tenant ought to prove the real interest left there, before he claims anything; and if he could prove it satisfactorily, it is not any disadvantage to the landlord, but rather a benefit to the incoming tenants to pay it, than to have to wait for the several unprofitable years without getting anything off his farm.

Then your opinion is that the payment to be made to the outgoing tenant by the incoming tenant should be upon the principle, not of reference to the capital expended by the outgoing tenant?—Certainly not; because if a man does spend money foolishly, and it turns out badly, such as drains made too shallow and ploughed up, or the drain being made of improper material, or if he in any other way fooled his money away, no sensible valuer would give compensation for that, nor ought he to have the power to do so.

The principle, in your judgment, ought to be the value left in the land for the incoming tenant, not the

capital expended by the outgoing tenant?—For the value left in the land. It would be proper for the valuer to be furnished more or less with the items of expenditure, showing what had really been done; it would not be likely that an opponent taking the landlord's or the incoming tenant's side would be willing to take a man's mere *ipse dixit*, unless he could prove how far it had been done; I cannot conceive either that we have a right to call upon landlords to give back money foolishly expended.

You have stated, that in your opinion drainage is one of those things that would come under that head?—Yes.

For what time should you think drainage ought to be compensated for?—That would depend upon the mode in which it had been done; I am speaking of the substantial mode in which it ought to be done; if it were done upon the system of mere wood drainage, or sometimes only of the hedge-row, and done shallow, it will cost very little; I should say at the end of seven or eight years it would be but a small claim that the outgoing tenant could make for that drainage, because by that time the interest of the tenant would be very nearly, if not quite, exhausted.

What period should you assign for tile drainage put in not more than three feet deep?—If it was done well I think it would carry you over from 10 to 15 years; at any rate, where there is a decided benefit, and where the tenant might not have reaped the whole benefit of his expenditure, he ought to have compensation.

Should you think that the reimbursement for tile drainage ought to be extended over a period of 15 years?—That would depend on circumstances entirely. There are circumstances in which it would be proper. I think there may be circumstances under which a portion of the benefit would be still left in the land, and if done at the tenant's own expense entirely, I do not know whether some small claim might not be established; but in a general way it would not be so after 15 or 16 years.

What period would, in your opinion, be proper to be taken?—Twelve years, perhaps; or from that to 16 years.

You have stated, that in your opinion the land is rather poor about you?—Yes; some of it.

Is it your opinion that the land in your own neighbourhood is held from the landlord, who is the owner of an entailed estate?—I cannot say. Permanent improvements on the estate are sometimes made in Bedfordshire, I am free to admit that, by the landlord, such as drainage and buildings, the landlord getting an increased rental; and he is justified in charging a per-centage upon his outlay, provided it is not too great.

That is the practice in Bedfordshire?—On the Duke of Bedford's estate it is, and astonishing improvements are made.

Is that an entailed estate?—I suppose it is; I presume it goes from father to son; but they make great alterations on that estate.

You do not know in Berkshire what is the reason that the tenants have not expended the capital which, in your opinion, wants expending, to bring the land into a high state of cultivation?—I cannot say from personal acquaintance how that is; I should say on a broad scale, it is the same reason as may be assigned in other places, that no security is given to the tenants to induce them to expend their capital; they would do so if they felt that they were going to reap the benefit of the outlay.

Supposing the tenants have not the capital?—They could not then make the improvements. I believe there would be more capital employed in farming if there were more security; that the capital would go into the cultivation of the land; now people are afraid of it, because, under this precarious tenure they do not know whether they are going to be permitted to stay to take the benefit of their own outlay. I can give a striking illustration of that. I met with a gentleman who was not brought up to farming, but his health was rather bad, and he had got a niceish property, and was induced by his friends to hire a farm, which he did. It was a poor farm; that is, it was noted rather for its poor crops. I should say, on a grateful soil, that would pay well for good management. He went to work upon it in a good spirited manner, and he soon made it the admiration of the neighbourhood as regarded the crops. It was talked of upon the market, what capital crops were grown there. He went on very well for seven or eight, or nine years; but though he knew nothing of the sort, the estate was so circumstanced, that it was required when one of the members of the family died, that it should be sold, and it was put up to auction with four or five other farms in the neighbourhood, and it was sold. The new proprietor came to the occupier after he had bought it, and said, "Well, sir, you are a very good farmer, I should wish to retain you, but I have given a high price for this land, and I must have an increased rent; I must tell you, honestly. However, you and I will not squabble about it; I will have a person to look over the farm and see what it is fairly worth." The farmer knew he was in a pretty fix, and he found that all those improvements he had made were in fact put into the pockets of the landlords who had sold the estate, and that if he held it afterwards, he must pay a rent for his own improvements. He took the farm for a year or two, and got out of it as much as he could, and then gave up the farming, observing to me, "Whenever I go to farming again I will have a better understanding as to who is to have the benefit of my improvements."

Is there any reason why the man might not have secured himself by agreement with the landlord?—Yes, I think there is; it is well known that the competition for farms is very great; not exactly from profit, but the competition arises from the fact that the agricultural population increases as well as the rest of the population, and the acreage of the country does not increase. If a farm is at liberty, though it may not be a very desirable one, no gentleman has a difficulty in getting applications for it; that is indisputable. It often happens that the terms are laid down by the steward of the estate, and the man getting it, perhaps, would consider himself very fortunate. If he went into particulars, and said I want this, or I want that, he would be told, "Those are the terms upon which I am to let this farm," and he must either take it or go out of the farming business. He would like to have an improvement clause in the agreement, but it is refused, and he takes the farm under those circumstances.

Is there any reason why a man might not secure himself by agreement with his landlord?—The reason is, that there is a great indisposition found for the landlord to grant a clause of that kind; he can let his land without it, and he is not disposed to be called upon at the end of the term for any valuation.

Is there any other reason beyond the indisposition of the landlord to make such an agreement?—I am not aware of any one particularly.

You are not aware of any other reasons except the indisposition of the landlord?—I do not know of any other reason, except what I have named; but the point is, that such a clause is not and will not be given. If

it is wished that I should assign another reason, I will give one: another reason may be, and I think it is the case in some instances, that the landlord who lets his farm from year to year, of course is at liberty at any time to dismiss his tenant; and if there should be any misunderstanding, or if he should not go the right way at an election, or talk too freely of the injury of game, or in any other way offend the landlord, he can get rid of him, and there is no call upon him for compensation; the landlord can get rid of him with perfect impunity at the end of six months. I think that is rather an additional reason why landlords wish to be at full liberty to get rid of the tenants just as soon as they please; whereas I know that a clause of the description I am speaking of, or a general law that will more or less give compensation to tenants, would at once induce the landlord to weigh the matter, as to whether he would part with his tenant, if he farms his land pretty well: and when the tenant might have a stiff claim for compensation, I do not think a landlord would part with his tenant quite so quickly under those circumstances.

You have stated, that an inducement to the tenant to lay the capital out on the land does make it more valuable to the incoming tenant?—Yes.

Therefore it would be to the landlord's interest to have that capital laid out?—Yes, I think it would; but it is a mistaken policy on the part of landlords, not granting the compensation; I believe it is as much the interest of landlords as tenants to grant it, but they do not understand the matter rightly; and then there is the six short months' control over their tenants. The fact is, unless we can offer some inducements or reasons for doing so, they are not disposed to grant it by mutual agreement. I believe, at the same time, they are standing in their own light; the estate would improve in value by giving compensation, and the tenant would feel attached to the neighbourhood in which he was, and would do everything he could for the preservation of good order.

You stated that your father held a farm of 60 acres or upwards, and that he drained it twice over?—Yes, he and his son; and the latter did it again, which made it three times.

Can you tell how long it was after the first period of drainage that the rise of rent took place that you have stated?—I should say the drainage commenced about the period just before the death of the former landlord, and he had got it pretty well cultivated at that time; drainage was not so common then as it is now; he lived a few years there before he commenced draining.

Did he hold under lease?—No, from year to year all the time.

Then you cannot inform the Committee exactly how long it was that the drainage had been done before the increase of rent was put on?—The drainage would be completed within a very few years, I think not above two or three years, perhaps scarcely so much as that, before the rent was increased.

How long do you think any part of it had been done?—Part of it might have been done some little time. He farmed on the four-course shift, and he would do one-fourth of the arable land in the season.

How was it done?—It was not done in the costly way that it is done now, but by fetching blackthorn bushes from the wood and using straw; that was the nature of the drainage at that time.

Can you inform the Committee of your own knowledge whether the increased rent you have stated was put upon the farm on account of the improvements from drainage, or whether it was from the circumstance of the increase of the price of produce?—I have no doubt that one of the advances was in consequence of the increase of the price of produce; but as the other farms were not advanced in anything like the same proportion, I am quite sure that a large proportion of it was the result of my father's own improvements.

Do you think that even where capital is laid out on the farm judiciously, as in the case of draining, that after a certain number of years the landlord has not the right to expect some advantage from it?—My idea is, that if the landlord does any part of it; if, for instance, he finds the materials and the tenant does the labour, so that between them the estate has been improved, then the landlord would be entitled to an increased rent; but if the whole improvements (as it was in this case) be made by the tenant, I cannot see how, except it be in better times, the landlord can claim an advanced rent upon the tenant's own improvements.

Take the case you have already stated, is it your opinion that, in a general way, the tile draining should run over twelve years?—Yes, or even more.

Taking a man to enter on a wet clay farm, and occupying it twelve years after it is drained, would he then have received back a fair remuneration for his capital?—Yes, pretty much so. I think a tenant could establish a very small claim to compensation after 12 years, but I would not say there would not be some claim.

Would his claim be quite exhausted in 14 years?—In all probability it would.

Would the farm be worth more or less at the end of of those 14 years than it was at the commencement of that term?—Yes, if the draining was done well, it would be so; but not so much so as to induce a valuer who was actuated by right principles to ask for much compensation for the tenant. He would fairly say, "You have had the benefit of your improvements here pretty well;" if any interest were left, it would only be a very small one.

If the drainage stood, as tile drainage would stand, or pipe drainage would stand that time, would the farm be more or less valuable to the landlord at the end of that time than it was at the commencement in its undrained state?—Yes, it would in all probability be worth more for that reason. It is undoubtedly a benefit to a landlord to have a good tenant.

In your opinion, then, would the landlord be entitled to have any increased rent, the tenant having received the full compensation?—I did not say in all cases he would have the full compensation. I see where the point hinges. I say he would have so far got himself back the benefit of that outlay, that the valuation then would amount to a mere trifle. I would notay there was not a benefit left in that land, and the landlord would be benefited by it.

Would the landlord be fairly entitled then to have an increase of rent?—I should say, if it was really worth more, he would.

Would, in your judgment, a wet clay farm, totally undrained, when made dry by a good system of drainage, be worth more or less money, in your judgment as a valuer?—Yes, certainly.

Then, in your opinion, at the end of those fourteen years, who ought to have that increased value?—If the tenant had not been fairly compensated, he ought to have it first; but if he had been fairly compensated, there would be an end of the thing. That shows, even in that case, that it is almost impossible that a landlord should have a good tenant without being more or less benefited by it, even after the time that any reasonable land valuer could ask compensation for improvements. The owner of the property should have the benefit of

the improvements, because it is in a better state after all, although the time had gone by so far that the claim was extinct as to the original outlay.

The tenant has had, in the period of years you have stated, a fair return for the interest of his money, and the capital that he has expended has been repaid to him?—Yes, pretty much so.

Then that is the just principle, that it should run over such a number of years as would pay the tenant a fair interest for his capital, as a trading capital, and restore his principal and money back again to him?—Yes.

It would be the contrary of principle to give him more than that remuneration for his improvement; all beyond that would be fairly and justly the right of the owner of the soil?—Yes.

You say you have been accustomed to value between outgoing and incoming tenants, and you have stated one or two cases where, within your knowledge (which is considerable, of course), you were informed that considerable injury had been done to the outgoing tenant?—Yes.

Have you seen any cases in which farms have been given up in a dilapidated state?—Yes, a great many.

Are they more or less in number than those where the tenants have been injured, do you think?—That would depend very much upon circumstances. When we speak of dilapidations generally, we apply it very much to buildings and premises.

It is applied generally to a bad state of cultivation, as well as to dilapidations of buildings?—It would be necessary to know what the state was when the man commenced. I have seen many times land in bad condition, and I should require to know whether or not the man had made worse of it than it was originally; it might be bad, but it might also be bad when he began; I could not give an opinion upon that, unless I knew the circumstances of the case.

A man taking a farm in a bad state of dilapidation, and engaging to cultivate it under a course of good husbandry, ought not to leave it in a bad state?—No; if he does, I should have no objection, as a rule, to give the landlord compensation; in that case I should say, in the event of any claims for drainage or anything of that kind, or any claims for improvements, there ought to be a fair set-off by the landlord against any dilapidations or mismanagement there should be; you cannot draw a just line without it.

Can you suggest to the Committee any means by which the incoming tenant can recover against the outgoing tenant such an amount of dilapidations?—That will be a matter for the landlord to recover.

Take a landlord or outgoing tenant; can you suggest any mode in which the landlord or incoming tenant could recover against the outgoing tenant the amount of such dilapidations or bad husbandry?—Presuming on a clause in the agreement, or by the general law of the land, that the tenant is entitled to compensation for his improvements, I should presume that that same law would make provisions against dilapidations; that there would be a set off to those improvements in any dilapidations committed; but if there was nothing but dilapidations, I apprehend the common law of the land would come to the aid of the landlord, and he would receive from a jury proper damages where damages had been sustained.

You, as a practical valuer, might know that it is nearly impossible by common law to recover any damages of that description?—I have known some instances in which damages have been recovered.

It is a matter of extreme difficulty, and must be a very extreme case in which damages might be recovered, might not it?—I have no objection to strengthen the power of the landlord with respect to that; if a man farms badly, I have no doubt it is an injury to the country at large.

Can you suggest any mode to the Committee by which that could be done?—I think if you were to give a clause for general improvements you would not find it the case. I think dilapidation arises in a great measure from the fact that a man has no security that he shall stay to receive the benefit of his improvements; if he was to go to work and farm well, with good security, by a clause to give compensation for improvements, cases of dilapidation would be few.

Supposing them to exist, and supposing they did not cease in consequence of the legislative alteration you would propose, can you suggest any mode by which that object, which you say is a just one, could be secured?—In any act of parliament that we might contemplate that would provide a general compensation to the outgoing tenant for unexhausted improvements, it would be an easy matter to have a clause also, enabling the landlord on a man's quitting his farm exhausted and deteriorated, to claim compensation upon the same principle and recover it in the same way as he would recover his rent. I see no difficulty about that, nor any unfairness either.

In your opinion it would be just?—Yes, I think so, if the clause was fairly drawn.

In your opinion, is the land of England held by men of abundant capital or short of capital, so far as you have seen?—I think for the most part the best capitaled tenants have got the best property: in those cases the landlords do not stick to the last shilling for rent, but they are induced to bargain with the tenants and take and keep them on, because they have the means of farming well. It often happens that men who stick out for the last shilling in rent will take men without capital, and they get the rent, but nothing else; the landlord is sure to be paid; there is nearly always enough on the farm to pay him. I think want of capital it a great public evil, but it arises from want of security more than anything else, in farming.

Is it your opinion that there is a want of capital?—Yes, I do think so, and partly from the manner in which the farmers have been dealt with.

Do you think that some of the bad farming is from want of capital?—I should say partly so, but more particularly from want of security; because I believe capital would flow into the cultivation of the land, if there was security; and I instanced a case, I think particularly bearing on the subject, that of the gentleman who went into farming without having been brought up to it, and who gave it up from the want of security.

You mean by capital flowing into farming, men of more capital coming in and putting out men of small capital now engaged in it?—In some cases it would be so.

The weak man would be squeezed out?—In some cases he might.

Or be obliged to give it up altogether?—Yes, sometimes; but a man would try to do better if he had sufficient security, and he would have less difficulty in getting accommodation.

You say there is an equal indisposition on the part of the tenants to take leases, as on the part of the landlords to grant them?—I do not say equal; I say there have been cases. I said there was an indisposition and a difficulty in taking leases, on the grounds I named.

Of course, in the face of a falling market, men do not like to tie themselves to pay a fixed rent?—There has been a difficulty of that kind;

but generally speaking a corn rent, if you can get it on a fair basis, is better and safer between landlord and tenant.

It might be a good thing in a falling market, and a bad thing in a rising market?—We should have to take it on both sides; I have engaged in one for 20 years, and I do not complain of it at present.

Sometimes the price is high when the produce is short?—It is the case occasionally.

Then a corn rent is tried?—Yes.

A man without good capital would hardly be able to get on then?—The reason why I think a corn rent is more important is, that it favours a man of only moderate means. The man who has got ample means, and can stand the storm, perhaps upon the whole is as well without a corn rent; I think it is safer upon the whole to keep property together.

If there was a law made to regulate tenant-right, then the way you propose is to over-ride agreements between man and man?—If I understand the term over-ride there.

The question refers to setting those agreements aside?—If a man makes an agreement manifestly opposed to a just law, it ought to be set aside, because if not, it would be in this way that you would have an act only to enable parties to avail themselves of it who thought fit to do so, and therefore it would be no better security than there is now. Some there might be who would apply it fairly, but in a variety of cases it would be evaded; and consequently, taking the multitude of cases, the evil would not be remedied; nor do I think there is any hardship about over-riding the agreements. The interference with regard to the compulsory commutation of tithes was upon the same principle. It was taken up upon the general ground that it was necessary for the public good that sooner than have such constant litigation the legislature should pass a law to require the clergyman and the tithe-owner to agree. That, I contend, is just the case in point here. If the good of the community demands or requires it, and it is necessary to secure good farming in the country, and to feed the people cheaply, then I think the legislature not only may, but ought to interfere, not more as an act of justice between landlord and tenant than for the public good.

Which is of more consequence in your opinion, the condition of the holding or the rent paid?—I think that both are of consequence.

Which is of the greatest consequence?—To say that it is of no consequence what a man pays in rent, would be a very wild statement.

Which, in your opinion, is of the greatest consequence to the farmer, the amount of his rent, or the condition under which he holds his farm?—I think the fair value of the land should be got at in the first instance; but it is equally indispensable that he should have security for the money he lays out in improving that land.

You have stated that it is indispensable that proper conditions should be fixed by law to enable the community to be fed cheaply?—Yes.

Is not rent a great element in the price of the produce of corn?—No doubt about it; I am no advocate for extravagant rents.

Why should not rent be as well fixed by law as the conditions of holding?—For many reasons; I think the cases are not analogous; that is, as to having a law to control the general rental, and having a law to secure a man what is already his own, are widely different things. I contend, that if I hold a farm as tenant-at-will, and invest certain capital in that farm, and I am not able, from the nature of my occupation, to take it out again in six months, or 12 or 18 months, the law I propose would only watch over me and protect my property, which I have as much right to as the landlord has to the fee-simple of the estate. It would be a very different thing to pass a law to require a man to take a certain fixed rent. I contend that the man who takes the benefit of my capital, laid out by me in making improvements, takes what is not his own; if at the end of six months or twelve months, notice is given to me to quit, and the landlord or the incoming tenant pounces upon that property which I have invested, I am robbed. If the landlord lets his farm, and the incoming tenant, who has not spent a shilling in the improvements of the farm, takes the land, and with it my improvements, for which I have received no return, that is manifestly unjust; and I say that the legislature, in granting a claim for compensation, only draws the line of justice between the two parties, to protect the property of the tenant so invested, as well as that of the landowner upon which the investment is made.

Within the number of years' experience you have had, do you know of a farm succeeded to by the incoming tenant in a good condition?—Yes, many.

Within 30 years do you know of any farms succeeded to by tenants in good condition?—Yes.

And they have succeeded to those farms at the expense of those who went before them?—Not in every case; the landlord has often made the improvement himself.

If they are in a good condition?—If the landlord had granted liberal terms to his tenant, and pledged him to keep it in good condition, he would have done no more than his duty.

On a change of tenancy, you have answered the question, that you have known tenants within the last 30 years succeed to farms in a good state of cultivation?—Yes, occasionally I have.

Then would not those men now, if they were to go out, be entitled to receive for that which they have never paid, they having only kept the farm up to the same state that they took it on?—If they could not prove that they had made the improvements, they would not be entitled to compensation; if a man has put nothing it but what he found in the land when he received the farm, he could not make out a case for a claim.

To put another case. Supposing a man seven years ago succeeded to a farm, upon which the preceding tenant had used a great quantity of oil-cake and a great quantity of manure, and that he succeeded to it according to the custom of Bedfordshire, without paying anything for it; if he was to go out, having only kept up the same state of cultivation, and were to claim and to be paid compensation according to your proposal, would not he be receiving payment for that for which he had never paid anything himself?—He would have no business to receive it. I should call upon him to show me that those improvements had been done by him; I should say, "Show me that you have made this expenditure claimed, and that you are not claiming for things done before you had the farm." And unless he could show that, I should make him no allowance upon that claim.

To assume another case. Supposing £100 worth of oil-cake to have been consumed upon a farm for every year that the tenancy was held, and that the incoming tenant paid nothing for coming in for that consumption, when he went out again, what should you as a valuer assign to him according to the law you would propose?—If it were merely applying to the consumption of cake, that is one of those artificial dressings that would not cover over a number of years;

that would only apply to what was expended in the last few years.

But the tenant having received a farm on which a great expenditure had taken place, and for which expenditure he had paid nothing, would it be just to make a law enacting that he should be paid for it when he went out?—The man certainly would be rather benefited by the law, as it found him in that case; but that would only apply in the first instance. Every person coming in afterwards would have the same benefit. The question, therefore, is whether there is to be no law giving compensation upon leaving a farm, because it would so operate in the first instance. Under that law a more just system would be adopted, and the most that could be said of it would be, that the law in that extreme case had given some little trifling benefit, for which the outgoing tenant had not much claim.

The effect would be that it would create a value in all existing tenancies, which no person had contemplated, and no person had paid for when he entered his farm?—It might be so, to a very small extent, and I think the case problematical.

But it would be so, so far as it went?—Perhaps it might be so more or less, but it would not apply very largely; there would be no much damage done in that department, I think.

Then you are distinctly to be understood to say, that a law should be made, in your opinion, not only to over-ride future agreements, but also to over-ride existing agreements?—It might be a question with regard to existing agreements, I admit; but I do not look upon it as an injustice. I contend that you are going to give only what is justly due to the tenant, and at the same time that law will take nothing away from the landlord. By a law to give compensation under these circumstances, the incoming tenant gets all that he pays for. The question seems to presume that the landlord is going to be injured by this legislation; but if the money is really expended, and the estate is really improved by that expenditure, he could not be injured; and on the other hand, if the estate is not improved, the tenant has no right to be paid anything.

In your opinion, during what period should lime be paid for?—I have not had much experience in respect to lime; my soil is principally chalky.

What period, in your judgment, should claying be paid for, that is, over how many years would you spread it?—That would depend a good deal upon the nature of the soil, and the benefit that would be derived more or less according to the quantity that was laid on.

Taking it as a matter of judgment, what period would it last in your opinion?—I should say, that nearly the same observations would apply to claying light land as would apply to draining wet clay land.

Would you throw it over the same period of 12 or 14 years?—Good claying of light land might be thrown over 12 years, or more. I have no doubt the tenant would have some benefit from it after that, but I think it would not give a tenant much claim after that number of years.

How long should you give for chalking?—Not quite so long, I think.

How long would you give for marling?—Marl and clay I consider about the same thing; I have understood them to mean the same thing; marl is a description of clay; chalk is another article, and may be put on sandy or heavy land; it will sometimes do good on either.

Marl and clay are generally applied for the same purposes?—I think they are pretty much to increase the solidity, and to give staple to the land.

Twelve or 14 years would be, in your opinion, the proper period to extend that over?—Yes.

If other parties, equally competent to judge with yourself, should fix the period of five or six years, how is the legislature to make a law upon the subject?—The legislature ought not to legislate as to the number of years or the kind of manure; I think the mere admission of the principle of improvement is all that the legislature had better do; and they are called upon to do it, for the benefit of the country. It is not more a measure of justice between man and man, than it is a great national question. I hold it to be indispensable, if we are to maintain our position, and the country is to go on, and we are to maintain our people; it is one of those improvements in legislation absolutely called for, from the lapse of time.

You think the legislature must not descend to details?—I have always said, do not descend to details; the less you do descend into details, the better.

What is the practice in Bedfordshire with regard to agricultural fixtures; you have stated that a relative of yours had put up a number of very superior ones?—That has only been recently done; he is in good hands, and is not under much apprehension.

In your practice as a valuer, are such fixtures as thrashing machines allowed to be removed?—There would be a demur about it. According to the present law, he could not remove the building.

The question refers to the machinery, and not to the building that contains it?—I should say that might be removed; but the shed for the horses is a building that could not be removed, in law.

And to a chaff-cutter, that is driven by machinery, would the same principle apply?—Yes; the machinery might be taken away, and the building could not be removed.

As to the steaming apparatus, what would you say?—That would be removable.

All those agricultural fixtures would, in your judgment, be removable?—The thrashing machine and the chaff-cutter hardly come under the appellation of a fixture, so much as those that attach to the free-hold, which could not be the case with the chaff-cutter or the thrashing machine, which I think would be removable.

The question does not ask any speculative opinion, but as a valuer in Bedfordshire, can you inform the Committee what the positive custom is in these respects?—Whatever the custom is, the tenant would feel that he ought to be paid for them; not, of course, what they cost, but what they are now worth; but he could claim nothing by custom if it attaches to the free-hold.

You are asked as to the customs in Bedfordshire with respect to this machinery; are the Committee to understand that the practice in Bedfordshire is to remove it?—Yes.

Mr. Newdegate.] You have alluded to the great injury that it was apprehended would accrue from the sudden determination strictly to preserve game upon a farm let under lease?—Yes.

If that farm had been let under a yearly tenure, would the same injury accrue, the tenant having the means of bettering himself if he thought fit so to do?—The tenant could come to the landlord at once and say, "If you are going to stock my farm in this way I cannot keep it, and you must either give me permission to destroy the rabbits, or I must see less game upon the farm if I keep this farm."

Or he must give the farm up?—Yes; or he must give the farm up.

The disadvantage to the tenant then in that case would be, that if he had made a large outlay he would have no power of recovering compensation for that out-

lay, unless it was specified in the agreement?—Certainly not.

It would be a disadvantage to the tenant?—He would be injured as a tenant-at-will if a person overstocked him with game.

You do not appear to understand the question: it is this; your objection to tenancies-at-will is, that a tenant may be ejected without having time to recover the value of his improvements?—Yes, it is.

Supposing, in the agreement for his yearly tenure, compensation was awarded him, would he then be injured?—No, I do not know whether he would be materially injured in that case, but I should prefer a lease, giving a security for holding as well as a security with regard to the outlay. I am quite of opinion that I should prefer a lease that I could get renewed four years before it ran out, to anything else.

But the objection to the lease you state to be this, that if the market fell, the rent might be extremely onerous?—Yes, without it was a corn rent.

The objection would not apply so strictly to a yearly tenant?—No; but there is this to be said on the other hand: a man who had a lease would not be liable to an immediate advance in the rent in case of corn going up; the yearly tenant might be liable to the increase of rent; the landlord might say, "Farmer, the things are better than when you took the farm, I must have an advance of rent;" it tells both ways.

In case of the rent being increased, the tenant-at-will, with a compensation clause in the agreement, would have the alternative of saying to the landlord, "If you raise my rent, I will leave your farm and claim compensation," would not he?—Yes, if there was a clause for compensation.

Would not that be the alternative against the landlord raising the rent unjustly; that is, would not the power of the tenant to throw up his farm and claim compensation for improvements be an inducement to the landlord not to raise the rent?—No doubt it would; but I do not think compensation will be paid by the landlord. I do not think, if an act passed this present session to give such compensation, that in one instance in 20 the landlord would pay that compensation; he would give to the incoming tenant the occupation of the land, and that incoming tenant would pay that compensation in addition to the mere acts of husbandry, and other matters he would have to take by valuation.

If a landlord attempted to raise the rent upon the incoming tenant, and the incoming tenant had to pay for an increased valuation, is it not very likely that the incoming tenant would demur when he had the prospect of an increased rent and large compensation to the outgoing tenant perhaps as well?—I think it would be the case more or less; but a man could not pounce upon another person's property without compensation, and consequently there would not be so many removals. The tenant would keep longer on the estate, and would feel more interest in it. There would not be so great a disposition in the landlord to remove the tenant, nor would there be a disposition on the part of the tenant to remove.

You stated that you thought all that the legislature ought to contemplate, was the general question of improvements, and that the legislature ought not to take any means to ascertain the value of that improvement by inquiry into details?—Not as regards the legislature, no more than can be avoided. I think all the legislature has to do is to admit the principle and right of the tenants to receive compensation.

Then the effect of that would be this, that the decision of the valuators would become law?—Yes, but the landlord would have a fair share in the appointment of the valuators.

The decision of the valuators would become law?—I do not say that in no cases there should not be a covenant in the agreement upon the point; but I do say that I am sure the less the legislature enter into that the better. The principle recognized is all we claim.

Is it not necessary that some means of testing the basis of the decision of the valuators should be afforded, to give an opportunity of appeal in case that award was unjust, or was disputed?—A schedule of claims should be produced, and it is my idea that in any legislative enactment that should be passed, in the event of an unjust decision being given by the valuators, there it might be necessary in special cases to have the right of appeal in any of the courts of law.

Would not it be necessary then to provide means of testing the award, in order to enter an appeal against it?—To test it by what means?

By some statement of the details upon which the award was founded.—I think that the person making the claim ought to show the grounds of his claim

And you think that he should be compelled by the law to do so?—Yes, no doubt of it.

Mr. COLVILLE.] You have stated very minutely the nature of the unexhausted improvements the tenant ought to take at the expiration of his tenancy from the landlord; will you now state the nature of the dilapidations which, in your judgment, the landlord ought to demand from the tenant at the expiration of his tenancy?—I do not see how that is possible.

Buildings out of repair, would that be one class of dilapidations?—If the tenant had covenanted in his agreement to repair buildings, then of course he would be liable for dilapidations; if the landlord was to repair the buildings, of course he would have no claim on that ground; or if the agreement ran thus, that the landlord should find materials, and the tenant apply them, on the landlord showing he had offered suitable and proper materials, and that the tenant would not use them, there would be a just claim for dilapidations.

Drains left uncleansed or trodden in by cattle, and ditches left foul, would you regard those as dilapidations?—Yes; and the spoil of fences would be so; nothing would more mortify me, if I were a landlord, if I had some good fences, than if a man chopped them down unskilfully, or left them to the spoil of such; I should say that those were dilapidations.

If he cuts his hedges in an unworkmanlike manner, would you consider that a dilapidation?—That is a dilapidation, more or less.

Supposing he allowed his land to get foul with weeds, is that a dilapidation?—I think there would be no difficulty about that, because most landlords would protect themselves in those respects, by saying, I will have my farm farmed in a good and husbandlike manner; that would be the general tenor of the agreement, and the man who would not keep to it would be chargeable with dilapidations.

Are weeds, annual and perennial, dilapidations?—If a man entered upon a farm, and stipulated that he would farm it in a good and husbandlike manner, according to the customs of good husbandry, and yet allowed the churlock and other weeds to run to seed, and paid no attention to the weeds, that would be dilapidations.

Supposing a man kept less stock on a farm than he ought to have, would that be dilapidations?—I should doubt that; it would depend upon what stock the land would be capable of maintaining; that would be very difficult to go into.

Mr. HENLEY.] You have stated that what you think

necessary is that the legislature should affirm the general principle?—I am more concerned about that than anything else.

That general principle being affirmed, how could you secure that even in different parts of the same county the valuers would carry it out in the same manner?—Valuers living in the different localities would know what was good farming in those localities, and what was the general business of good farming; a man in Kent would know what good farming was there, and so would another man in Berkshire. We should not have one man to value the whole kingdom.

In point of fact it would lie with the valuers at the end of the tenancy, to decide according to their own judgment entirely upon the matter, there being no law to direct them what items they ought to take into account?—I do not go so far as that.

Where do you stop short?—I will tell you where I stop short; I would say, supposing I was applied to by a person taking the farm, or by the landlord, Here is a claim for compensation; give me a schedule, prove to me what you claim for; a fair schedule should be made of all claims; then he would say, in the first place, I have drained such a field, or such a field, and I have only had it three years; I drained another field, I have had that six years, and for that draining I have an interest in the land, and I leave it to you, as a man of business, to say whether it is not so; and it would be the same if the man had clayed the land in a number of years.

That is leaving it all to the valuator; the valuator would have to decide not only the amount to be paid, but what improvements the tenant should be paid for; that would be so, would not it?—Yes, more or less it would be so; but the landlord would have his fair voice in the appointment, and he would not be very likely to pay money for nothing.

Mr. DENISON.] You have stated that there was some point where the law could come in?—I think, as regards the general question as to how long artificial dressing was to be regarded as to a man having any claim, you would be able to come to that pretty much upon the evidence before you, or the valuers of a neighbourhood would lay down some pretty general rule as to that.

Do you mean that you would include in your general law some such minute point as the question of how long certain manures, and so forth, should run?—I objected to it before; I am for the general principle, and I think it a great deal better the less the law enters into details; it would soon become a fixed maxim.

Then be so good as to confine yourself to the one view of the question. You have said, in your evidence, that you want to fix the general principle, and now, at the close of your evidence, you say you wish to strike an average by the different districts, which should be prescribed by the law; you cannot mean that?—There seems to be a great objection in this Committee to leave the whole of this matter to the valuator, without a law recognizing what the value should be, leaving open a very wide field; I say, admitting for the sake of the argument that it is so, then it is not a sufficient reason why we should not have a law to recognize the tenants' improvements, because you can ascertain by practical men what would be about right and just; but I still persist in my original statement, that it is best to keep to the general principle in legislating upon the subject.

Mr. T. EGERTON.] You were asked two questions; the first was, as to whether the improvements were to be treated upon the gereral principle, and you said, "yes;" and then you are asked whether the consequence of that would not be to leave the whole matter in the hands of the valuators?—Yes, it would in that case, more or less so; but valuators would adjudicate on a rule generally admitted.

You now qualify your answer by saying that there are improvements that you think the law could define besides that?—I said that the law might define it, but I do not think it would be any improvement for the law to go into that.

Mr. DENISON.] In your opinion the law should not do it?—Exactly so; I prefer the recognition of the principle of improvements, because they vary so much in the different parts of the kingdom.

Mr. HENLEY.] Might not valuators in the same county differ in their opinion as to the things that the tenant was entitled to be paid for?—Yes, they often do; if men go into valuation to make the best interest they can for their employers, there is no possibility of coming to terms at all; but then there is an umpire comes in, in whose appointment the landlord has an equal voice with the tenant.

And do they generally decide half-way between the parties, without much justice either way?—No, I would not say that. No man of principle will do so.

Mr. COLVILE.] Is not the umpire generally a tenant farmer?—Yes, when the ordinary valuations made are between the incoming and the outgoing tenants.

The landlord is the responsible person?—Yes, but the landlord throws it upon the incoming tenant.

Mr. T. EGERTON.] You say this is a matter not between landlord and tenant, but a matter between the outgoing and the incoming tenant?—Pretty much, though the landlord is responsible at law.

Mr. HENLEY.] Is not it of some consequence to a man about to take a farm, to know what the items are generally that he is called upon to pay for?—Yes.

If it depends upon the valuer not only what the tenant is to pay for, but what the cost upon each article is to be, he could not tell what items he would be called upon to pay for until after the valuation had taken place?—I should consider so; and in some instances it would be desirable that the tenant should know exactly. But if you gave a tenant the offer of a farm that had been very much improved, he would say, I have no objection to take it with the improvements; and then the landlord would ay, If you can come to terms with this tenant I will let you the farm; in fact, in nineteen cases out of twenty he would throw it upon the incoming tenant.

Would not it be an inconvenience to a man taking a farm, not to know what items he might be called upon to pay for, as well as the amount set upon each of those items?—I think he ought to know what he has to pay for, and a schedule would be given in all cases.

You say that the valuer is to fix the items, as well as the price of the items?—Yes.

Then no one could tell what items he should be called upon to pay for until after the valuation?—No, I believe not.

Would not that throw very considerable difficulties in the way of a man taking a farm?—That might be ascertained before he took it, if he pleased.

How could he ascertain that?—A valuation might take place.

Before the farm is let?—Yes, the landlord is liable if the tenant does not take it; a valuation might take place even before the farm was let.

Do you think it would be right, if you were to fix it upon the landlord, that the tenant should give any notice

to the landlord that he might watch the expenditure?—I should say, for all permanent improvements, the landlord ought to have a voice in respect of them, if he is to be called upon to pay a portion of the money; that is, where the tenant is farming from year to year. If the tenure is under lease it is another thing.

Take the article of expenditure in corn (not cake or any purchased article, but the article of corn) used in the feeding of stock; would not that be an article with regard to which a fraudulent outgoing tenant would be able to impose upon a proprietor; supposing, for example, that he were feeding his sheep with beans; in the case of such consumption as that, would not it be more difficult to produce evidence of the consumption, than where oilcake had been purchased for the like purpose?—There would be some little difficulty about it; but the valuators would take evidence. If I had any suspicion that there was more charged for corn consumed than was at all requisite or common, I should summon some of the men that had the care of the stock to give evidence, to prove whether that quantity of corn had been consumed or not, and then judge moreover whether the claim was a reasonable one.

Of course it might be less even than was common; should you then think it necessary to have proof?—Proof ought to be given.

Would it not secure truth between the parties, that in those cases the party about to pay should have the opportunity by observation of seeing whether it was just or not; that is, supposing a tenant were about to leave, would not it be a reasonable thing, if he expected his landlord to pay for corn consumed by the sheep, that he should give notice that the landlord might send occasionally to see that the sheep were eating the corn?—That would show a very poor understanding between the landlord and the tenant.

In making laws sometimes, there is not only a poor understanding, but a hostile feeling?—It cannot be supposed certainly that men will always do what is right, or there would be no necessity to make laws to govern them.

The object of these questions is, not to induce the supposition that generally there is any bad feeling, but it must be considered that in making laws such feelings may arise; have you not, as a valuator, had experience where frauds have been attempted even with respect to the tillages?—There is no question of that, but I take pretty good care to sift them out.

That being the case where a small amount is now paid, you having known cases where frauds have been attempted, is it not necessary where larger sums are proposed to be paid, that great care should be taken to prevent frauds from being introduced?—Certainly.

In respect to corn as an article of consumption grown on the farm, is it not difficult to arrive at the amount of the consumption in the same way as other improvements; it is not every farmer who knows what his cart-horses eat exactly, is it?—No, that is the fact. But the landlord's valuer would be satisfied before he signed the award.

A good deal might be consumed, might there not, that they could not get evidence of from the labourers?—Yes.

Mr. Colvile.] In order to prevent fraud, is not it desirable that the tenant should make a return year by year for all unexhausted improvements that he means to claim for; that it should be the basis on which the valuation should be made?—That would entail a great deal of trouble upon parties, but there would be no very great difficulty in it.

Can anything be more simple; would not all that the tenant would have to do be to send a notice to his landlord, saying, I mean to claim such and such articles, or so many tons of oil-cake, and so many quarters of bones, whatever the claim might be for the tillages; would not then the landlord or his agent, after inquiry, if he considered the demand right, give his sanction to it, the accounts being kept by the agent, and at the end of the tenancy would not that be the basis upon which the valuation might be made?—I should have no objection to that on any ground but the trouble; no right-minded tenant would wish to gain anything by fraud; and if it were necessary to guard the interest of the landlord, to make that return, it would be, generally speaking, a return of all the cake and corn consumed, and of all the improvements made upon the farm; it would entail a very great deal of trouble upon the tenant, and I think unnecessarily, because I do not think men would shift so often if there was a good understanding between the landlord and the tenant; they would feel secure that they were going on well with their farming, and that they or their family would ultimately receive the benefit of these improvements.

As a practical valuer, have you not found it difficult to investigate accounts that have taken in several years preceding; six or seven years, or more perhaps?—It requires that the valuer should be well satisfied that he is not imposed upon, I admit.

Then the evil that the question suggests, if it be an evil, would be the least evil of the two?—I think decidedly so.

Mr. Henley.] In fact, would it not be the case that if fraud were not effectually guarded against, it would be an injury to the incoming tenant?—Yes; but the imaginary evil would not be so great as that actually existing.

The Evidence of Mr. William Hutley.

Chairman.] You are a practical farmer, residing near Witham, in Essex?—I reside at Witham.

What extent of land do you occupy?—Rather more than 1,500 acres.

How much of it is under the plough?—About 1,200 acres of it is under the plough.

Is it partly your own property?—Part of it is my own property; about 500 acres of it is my own. I farm half of it, and let half.

Have you made any improvements in the land you so occupy:—Yes, very great.

Describe those improvements to the committee.—By keeping a large quantity of stock, sowing the land with Italian grass, feeding it two years with oilcake, and working it up for corn.

What is the quality of your soil?—Some is very heavy tenacious clay.

Is it drained?—This land is not drained.

Have you made any other improvements in your property?—Buildings have been placed upon it suitable for the occupation.

Is that upon your own land?—Yes, that is on my own land.

Have you much increased the stock upon the farm?—Yes, I keep a great deal of stock.

Can you state to the committee to what extent you have increased it?—I farm one farm adjoining my own land, of about 600 acres; that used to keep very few sheep, now it keeps a very great quantity; my stock of sheep at this time is rather more than 1,000, without the lambs, and in the summer time about 1,600; I clip about 1,600.

Have you generally increased the production of corn on your land?—Very much indeed.

Do you keep any beasts?—Yes, I mostly fatten from 90 to 100 beasts.

How do you fatten those beasts?—Upon mangel wurzel, Swede turnips, and oil-cake.

Do you look for a return for the oil-cake in the increased value of your beasts, or do you look for it in the manure?—Partly in the corn, and partly in the bullock.

You do not then expect to be remunerated for the outlay of the oil-cake in the improvement of the beasts only?—No, I never had a lot of bullocks that paid me in my life for the oil-cake and vegetables.

What proportion do you reckon the loss in the oil-cake as far as the return of meat goes?—One-third with the oil-cake is the loss against the bullock.

What is your opinion of giving oil-cake to sheep?—I give a great deal of cake to sheep. I should say that sheep pay better for the cake than the bullocks.

When you give up a farm have you any compensation for the loss on the cake given to your beasts?—Not a halfpenny.

Have you had occasion to give up any farm?—I am next Michaelmas going to leave a farm of 600 acres I have had 21 years, which I have improved as much as any farm I think there is in Essex.

So that it is your opinion that even a 21 years' lease does not protect an improving tenant in keeping up the high cultivation of his farm?—I think not, if he has an idea of stopping; the lease, of course, would for some time protect him; in 14 years he would lay out his capital, expecting to reap benefit from it; and the next seven years he would take all he could out of it; I should not have kept up the farming in the state I have done if I had known that I should not have had it again unless I gave considerably more money for is, and then I began to whip a little.

Are you to be understood to state that you have a farm of 600 acres, with a 21 years' lease, and that not being aware you were about to give it up, you had not taken much out of it; but, that in justice to yourself, if you had been aware of it, you would have reduced its cultivation more?—Yes; in fact I fed all the young clovers with oil-cake for wheat; now there is the wheat.

Whom does the dung belong to?—The dung upon that estate belongs to the landlord; that I consider a very good covenant in a lease, that it should belong to the landlord.

Why do you consider it a very good covenant in a lease?—Otherwise it might take too much capital for an incoming tenant to take the farm.

You would remedy the disadvantage to the tenant by making an allowance to him for the extra quality imparted to the manure in high feeding, by giving the outgoing tenant some allowance for the food which he has purchased?—That ought to be so, but that is not my case; I have abstained from using any artificial manure this year, so that the dung now is nothing but the straw-yard dung.

Have you used any artificial manure?—Yes: £250 worth this last year.

Of what nature?—Guano, rape-cake, and star-fish; 4,000 bushels I used of the latter for my own land.

What compensation do you obtain for that?—Not a farthing.

Inasmuch as all manure belongs to the landlord, you obtain no compensation?—I do not. The lease only expresses farm-yard manure.

Is it usual in Essex to give compensation to the outgoing tenants for the purchase of artificial manure and food?—I know of no case, unless it is a special bargain where you make a covenant to keep up the farm under an agreement between the two parties; I know of no landlord that makes a bargain to give compensation.

Do you consider that a disadvantage to the cultivation of Essex generally?—I consider it a very great disadvantage.

Is it your opinion, as a practical man, that if landlords gave this compensation there would be much increase in the produce of meat and of corn?—I have no doubt about it; I am of this opinion, that every acre of land would be capable of growing a good crop every year if compensation was given for all improvements; and some of it would grow half as much again as it does now at the latter part of the leases.

In stating that increase of crop, you do not confine yourself to the use of artificial manure, but include improvements by draining and otherwise?—I mean the use of artificial manure, the use of oil-cake and draining.

Is there much land you know of that requires drainage?—Yes, I have two farms that I drain well; I make the land as dry as I can; I have done a good deal of it. I have one farm of 170 acres I took four years ago last Michaelmas; I put a mile of drain right through it, from five to nine feet deep; the effect of it is most extraordinary; it cost me a great deal of money, upwards of £100, and I have no compensation for it at the end of my term; I had a fancy about it; it was a nice piece of land; it was a good deal of it bog land; one acre was fenced off, being dangerous for cattle to tread upon, and now it is the best land in the parish.

On the undrained land has the wheat suffered already, in your opinion, this year?—The undrained land, that is, the chalky marls, have suffered very much indeed; I think the tenacious loams have not suffered at present, but they will suffer more as the dry weather comes on; they will get very yellow indeed, a great many of them.

Can you estimate at all what that loss amounts to?—Six to eight bushels, a great deal of it.

You say there is a good deal of undrained land in your neighbourhood, but the draining has been practised in Essex as largely as in any part of England?—Ever since I recollect we have been draining in Essex, and my father before me; the very tenacious lands have not been drained in Essex except here and there; I have a piece of two acres, I have done on my own land, that in one year is answering very well.

Do you think that where landlords cannot, from their pecuniary circumstances, afford to drain the land, if the tenants were encouraged by a general compensation to do so, that many tenants of capital would be found inclined to undertake that improvement themselves?—Plenty.

Would the recognition of that claim to compensation increase the employment of agricultural labourers?—A very great deal indeed.

Have you a difficulty in finding employment for labourers?—Not the least.

Not on your own farm?—I farm in four parishes, and we have no surplus labourers.

Are the committee to understand that there is a system of high farming in your neighbourhood?—There is a system of high farming there.

How many labourers do you employ to an hundred acres?—That depends upon circumstances in a great measure; in some parts of our neighbourhood where thrashing machines and things of that kind are used in winter time, they send them all away to their own localities; I farm land of that kind; I never turn my men away; although I am going to leave this farm, on my own land adjoining it I have been knocking down the fences and putting up new fences to keep those men on, so that they should not be wanting of labour up to Michaelmas.

What is the custom of compensation for acts of husbandry between incoming and outgoing tenants?—Nothing more than paying for the dung and fallows.

For naked fallows?—For naked fallows, or for tillage for turnips and sowing and hoeing.

Are there many naked fallows in your part of Essex?—A great deal of the chalky marls are fallowed.

Is there much of it which if thoroughly drained would be capable of growing green crops?—I believe all of it.

If those permanent improvements by drainage were carried out, would not the effect be to diminish the charge for working the land, so that the in-coming tenant should at least obtain some crop for his payment?—I think it would be well, but there is no doubt the draining very much facilitates the working of the land.

And you have also said, that the effect of drainage would be to dispense with naked fallows, and enable the land to grow green crops in your neighbourhood?—I think that a very great effect would be produced on this land of my own, where I can lay out my money freely. I do not have fallows at all, that is upon the heavy tenacious soil; I grow tares and feed them off with oil-cake; that makes capital preparation for oats; you might keep on that way for ever, and keep the land clean; when I get a stale piece of ground, I put 100 bushels of star-fish, 4 cwt. of rape-dust, and 2 cwt. of guano upon it per acre. I plant mangel-wurzel, and with Garrett's horse-hoe keep it clean, which leaves it in a good state for corn after that.

Although you do not obtain a return for the oil-cake expended upon the beasts, do you consider the keeping of beasts essential to high farming?—You cannot do without them.

It is the only way you see of converting the straw into good dung?—Yes, it is the only way of converting the straw into good dung.

Does not it require some outlay in buildings to enable you to keep them?—No doubt it does in many places. I am pretty well off for buildings; but no doubt they want a great many buildings; there is hardly one man in fifty does what I do.

Then, although you stand nearly alone in the practice in your district, you have no doubt from your experience, and from what is done in your district, it will ultimately pay?—No doubt about it.

Are there any other permanent improvements in other parts of Essex that could be carried out by the tenant if he were secure of compensation?—Draining and good cultivation would no doubt be gone on with.

As well as chalking?—This land does not want it now. I have chalked it pretty well all over.

At what expense have you chalked it?—It cost about £5 an acre.

Is there any customary compensation for that?—Not a halfpenny.

Could it be carried out much more largely than at present if the tenant were entitled to compensation?—A very great deal indeed.

Where do you get your chalk from?—I have three wharfs upon one farm I occupy, where I farm 900 acres; it comes up the river Crouch.

Does it come from Kent?—It comes from Kent.

What quantity do you put on per acre?—One freight contains about 75 tons, and we put that upon three acres, which costs about £9 out of the vessel; and then there are the teams to carry it on.

How much do you consider it costs you a cart load when you have got it upon the land?—That would depend upon the size of the cart.

How much a ton does it cost you?—We carry 24 bushels, and that would be rather more than a ton and a half; a bushel of chalk weighs about 120 lbs.

What is the length of the voyage from Kent?—Forty to fifty miles water carriage.

Have you any doubt that those improvements would be carried on to a greater extent than they are by the Essex farmers if they had compensation for them?—Whenever a farm is taken upon a lease, we see a great improvement. I can give an instance of two farms; in one of them the tenant took it at Michaelmas twelvemonth, and he has been carting chalk five miles to the farm; he has taken it on a 21 years' lease at a low rent. That is a farm that nobody would have; he is chalking it all over, and that will pay him well.

It renders the land more open?—Yes, more open and porous; it is extraordinary the effect which it has upon tenacious land.

Does it improve the quality of the produce?—Very much indeed.

Mr. NEWDEGATE.] You have said that there is no custom with respect to chalking?—None that I know of.

Are there any other methods of improving the soil; do you burn the soil?—I have burnt some old pasture land; in this tenacious land the burning is of very little use.

You say that with respect to buildings you are well off where buildings are required; supposing a tenant had the right to remove buildings which he himself put up at the expiration of his tenancy, or of offering them by valuation to the landlord, do you think that that would lead to the increase of buildings?—No doubt of it.

With reference to the custom that does exist, which you say extends to dung and fallows, how is that compensation ascertained?—The valuation of the dung is taken in this way, it is measured in the heap, and valued at so much a square yard.

The valuation does not extend to anything but the dung remaining on the farm, which is not spread upon the land?—No.

Is there any compensation under custom for manure, which has been spread upon the land?—No, none at all.

And there is no compensation for draining?—Not that I am aware of.

Perhaps you can tell the committee whether there is less custom in your district of Essex than in the adjoining counties?—That I do not know; I only know my own locality.

How is the valuation calculated for this dung on the farm?—By two indifferent parties; one chosen by one man and the other chosen by the other, and they choose their umpire.

And as the items are very simple, they have not to go through many figures to ascertain it?—The proper course is by measurement.

Mr. HAYTER.] Is that the only species of compensation that is given?—The only species I know of.

Supposing there is a mere tenancy at will, at the expiration of it the only compensation that the outgoing tenant receives is for the dung left in the yard?—For the dung and the fallows.

Does he receive any compensation for labour in husbandry; for ploughing, or anything of that kind?—Yes, for ploughing.

What are the holdings, Michaelmas-day or Lady-day?—At Michaelmas.

Have you got a thrashing-machine on your farm?—No, I have not.

They are common in the county, are they not?—Very common.

To whom do they usually belong?—To the tenant.

Does the tenant put them up?—Yes, the tenant puts them up.

Can the tenant take them away?—Yes, the tenant can take them away.

The whole of them?—They are not attached to the premises at all; they are merely set down and nailed to the floor.

Are none of them fixed?—I should say none, unless it is just a cross brace, and merely a nail.

Do you know the reason why they are not fixed?—Certainly; if they were fixed, the landlord would not, in some instances, let them be taken away.

Mr. NEWDEGATE.] They are horse power?—Yes, horse power.

It is not frequent, for instance, to let them out, is it?—A great many are let out. I know a great many of them that have sheds for the horses to work in; these sheds cannot be removed by the tenant.

And in many cases the machine is let out for hire from one farmer to another?—That is done by the machine-owner, who lets the machine, and goes with it.

CHAIRMAN.] You say that the dung which is left on the farm ought to belong to the landlord; is that the practice in any part of the country that you are acquainted with?—I speak of the farm I hold and am going to give up at Michaelmas; the dung does belong to the landlord; but I only mean now that it should belong to the landlord without a tenant right; if there was a tenant right, of course it might be made better, and then the outgoing tenant would be benefited.

The question referred merely to the present practice; it is the practice sometimes in your county that the dung should belong to the landlord, and not be taken at a valuation by the tenant?—I know no large estate but that, and there are several farms, the property of the late Mr. Clive, that he bought many years ago, and he bought up the tenant right; he could not let his land at any price, and he wanted some man to be tempted to go in and take the land, and not cost him much money.

You have spoken of about 4,000 bushels of star-fish being used; where do they come from?—From the coast of Kent.

What is the character of that manure?—It will last two or three years; I first manure with the fish, and that does very well on land with tenacious soil or for beans; I use that upon my own land; I have used a vast number of those fish upon my farms.

Mr. T. EGERTON.] Over what period of time does the oil-cake last?—I think the effect of the oil-cake would last four years from the feeding off the land.

On the arable land or the other land?—The arable land fed with stock.

Sir C. LEMON.] You say you occupied land 21 years, which you are going to give up; was that under one lease?—Under one lease.

Under a 21 years' lease?—Yes; it was a lease for 21 years.

Mr. COLVILLE.] Will you state if the farm is low rented which you have just given up?—It is not; I think there would be some trouble to find a tenant to take it with the increased rent.

What is the increased rent?—It is not a very large increased rent, but there are 40 acres of the land which have been covered with salt water, from a very high tide two years ago; it is next the sea; and that will not produce corn for the next seven years.

Have you fixed steam-engines in your county for agricultural purposes?—I know of none.

Do you think it an advantage that the steam-engine should belong to the tenant, and he should have the privilege of selling it at the expiration of his tenancy?—It would be very beneficial upon the farm, and ought to belong to the tenant no doubt.

You have stated that you farm highly, and that you employ a great quantity of labour?—I do.

Have you considered this point, whether in the event of a great fall in the price of agricultural produce, with the comparative fall in the price of cattle food that would be most likely to follow under those circumstances, by farming high you could farm profitably, by employing a great deal of labour and cattle food, or whether by farming low, which is merely allowing the land to produce its natural produce without stimulants, you would be most advantaged?—The only chance a man has to get money is by high farming; by farming low he is sure to get nothing.

That would be likely to be the case with very low prices?—He must farm high to produce quantity, even under low prices.

You have stated that one of the consequences of high farming is a great increase of employment for labour?—Yes, certainly.

If everybody was to farm high, would not your labour become so much more valuable, that it would be a very serious item in your account?—It is a very serious item now.

Would not it be increased?—Nothing is so profitable, I think, as labour well applied.

Mr. BURROUGHES.] You said that the tenants farmed the clay land upon lease in your neighbourhood?—Not in all cases; I hold all my own occupation on lease; I would not hold without.

Is there any covenant in your lease for chalking or marling?—No; some of the old leases in Essex prevent a man from putting chalk on his land; I think that is abolished now.

Sir C. LEMON.] Has there been any disinclination on the part of the tenants, in any part of Essex, to take land on lease?—No, I should say not; I think Essex has plenty of enterprise and plenty of capital, if the farmers could hire the land with tenant-rights.

Generally speaking, do the farmers like the security of a lease?—Yes.

What is an ordinary term of draining lease?—From 14 to 21 years, and some 7. I know where landlords like political domination and parochial interference, they will not let land for more than four years; I know several cases of that sort.

Mr. COLVILLE.] Which will produce generally the best farming, a lease without tenant right, or an annual agreement with tenant right?—A lease with tenant right; I should not like an annual agreement.

Mr. NEWDEGATE.] Should you object to it if there were compensation for all improvements?—I would rather have a permanency and keep on employing my labourers. A lease is the only sound protection to tenant and labourer.

Supposing the prices fall and the rent is fixed under a lease, would you not be a loser under that lease?—I should if it were a very serious diminution; of course there will be fluctuations; a man ought to be able to bear up against a fall in corn for two or three years.

The question means a permanent depreciation of the scale of prices?—The labour would be cheaper and the tithe would be lower.

You calculate upon indemnifying yourself by a reduction of wages?—I have no doubt that under any reasonable rent a landlord may charge for his farm, if the farmer has tenant-right he can always meet the times with a lease.

The operation of the compensation under a lease would only come into effect at the expiration of it?—Yes; at the expiration of it; but he would always keep his farm in capital condition in nine cases out of ten.

Would you give the power to recover dilapidations against the outgoing tenant?—Yes; I would give the landlord the same chance as the tenant.

Is there any increased facility for recovering dilapidations on the part of the landlord, or for recovering improvements on the part of the tenants required?—Yes, there is plenty of room; if the landlord has a claim for dilapidations there is always plenty on the farm to pay him.

Have you known cases of insolvent tenants?—Yes, but there is plenty on the farm, such as cattle and corn, and so on in the land, to pay the landlord.

Does that pay for dilapidations?—Yes.

In cases of heavy dilapidations, as the law stands, the other creditors might have taken possession of the stock; what would there be then to pay for dilapidations? There might be cases of that kind.

Is not it the nature of the law that it should be so?—I believe it is?

In a case of compensation under a lease, you would refer the amount of that compensation to arbitrators?—Yes, to arbitrators.

Would you require that such arbitrators should give a regular account of the items of improvements for which they charge compensation?—I think that the tenant should give an account of the quantity of oil-cake that he feeds in the year, or the quantity of corn; I think it is not anything more than fair that it should run over a certain term of years.

You would have the arbitrator certify that amount?—Certainly.

And return that amount as the basis of their award?—Yes.

Mr. HENLEY.] What length of lease do you prefer?—I should prefer 21 years; I have two 21 years' leases, and one 16.

In the event of a great fall in the price of produce, do you consider it possible that a man might break in a 21 years' lease?—He might break, but I think no provident man would break that had capital to begin with.

Suppose that corn goes down to 30s. a quarter?—He could manage that a little time; I think I could.

Suppose a 14 years' lease to run?—We may suppose a good many things.

That question is put to you, will you have the goodness to answer it?—I have no idea that we are to have wheat at 30s. a quarter.

Supposing it is so?—Of course he must take his chance, as the landlord does, whether it is 60s. or 70s.

Do you suppose that it would be probable that some tenants would break under those circumstances, under 21 years' leases?—Yes.

In case of a bankruptcy or insolvency of that kind, what should you propose to do with the tenant-right?—No doubt the farm would be in a vast deal better state of cultivation than if he was a tenant at will.

What would you propose to do with the tenant-right then?—Of course, if this man had made permanent improvements, such as draining, or had left a vast deal of unconsumed oil-cake upon the farm, he ought to be paid for that.

Or buildings?—The landlord would not be much damaged if he left buildings placed upon the farm.

If the tenant has failed to pay the rent which he has covenanted to pay, having paid it only during the high price of corn, and neglected to pay it during the low price of corn, the landlord would be injured, would not he?—The landlord does not let more than half a year's rent run.

If during the last 10 years of the lease the corn is at a low price, the landlord could not relet the farm at the same rent, could he?—He could if it was in the same condition.

Then do you think a tenant would give as high a rent with wheat at 30s. a quarter as with wheat at 60s.?—I am not speaking of wheat at 30s. a quarter; of course if it should go down to that, he could not let the farm at the same rent.

Would not the landlord be damaged?—He would have value received, as well in the drainage remaining, and the oil-cake.

Would not he be damaged with the loss of rent the last 10 years of the term?—He would not grant a lease for 21 years till he saw the times alter.

Suppose a tenant breaks in the middle of a 21 years' lease, if the landlord is to submit to a reduction of rent the last 10 years of the original term in spite of the tenant-right, would not he be damaged?—I never knew a case in my life where a man has broken with his lease, but he has kept his farm in such a state of cultivation that another man would give the same rent for it.

In the event of a fall of prices to 30s., would not damage accrue?—I should not think the landlord would alter the rent.

That is not an answer to the question?—I admit that he would be damaged.

Sir C. LEMON.] From what period are your leases generally completed?—From Michaelmas to Michaelmas.

Are the rents paid half-yearly?—They are all made payable quarterly.

Are they actually paid quarterly?—No; half-yearly.

Is the rent that is paid at Michaelmas rent due at that time, or the rent due at the Lady-day before?—The rent due at Michaelmas is paid in many cases on New Year's day.

So that a quarter's credit is usually given?—That is only by the old aristocracy; where there are smaller men, they take it earlier.

There is no general custom in the county in that respect?—No, not at all.

As to the postponement of rent, is there any custom of the country?—Not at all. I have a case in point that will show the Committee at once the necessity of protection. I am an executor under a will for a family: both husband and wife are dead, and three children are left. The farm has been in the occupation of the family for the last 40 or 50 years. I know of nothing that is wrong myself in the farming; it has always been a tenancy at will. Last Friday I had a notice to quit it. During the winter we have been carting town dung upon it. That shows that something is wanting, if that is to go on.

Mr. NEWDEGATE.] Do you generally find that the system is more favourable to the tenants on the large estates than on the small ones?—I think a man with a large farm has more advantage to produce corn cheaper than the one upon a small farm.

The question is as to the large estates, not as to the size of the farms?—I think not in Essex; now and then there are cases; generally speaking, they are quite as well off farming under a merchant.

The question was as to the small proprietors?—That is what I call the merchant; the man who buys an estate of 400 acres of land. The man farming on an estate of 10,000 acres is not better off than a man farming on the other kind of estate.

Do you know of any cases of land held under corporations or under the church?—I know of several large estates held under the hospitals in London; there are a great many in Essex.

Do you find that those are administered on better principles than on other estates?—Those estates are farmed as well as any in Essex; a little better, perhaps, taking it altogether.

The least favourable cases are where the landlord considers the rent a money payment, not making any return for improvements, or abatements?—The landlord thinks it best, of course.

Are those the least favourable circumstances for the tenant?—They are the least favourable circumstances for the tenant.

Do you think that the practice of considering the rent a dead payment generally prevails in Essex?—Yes.

Are the landlords in the habit of assisting in improvements?—Some are; some find the tiles or pipes for the drains.

Do they make any increase of buildings?—Not a great deal; some of them do.

What is the habit with respect to buildings? does the landlord generally erect them, or find the materials?—The landlord finds the materials: he very seldom erects them, except under special agreement: hardly any man goes and asks his landlord to build him anything: if anything is out of repair, he will find the materials of repairing it.

The habit is for the tenant to construct the buildings, the landlord finding the materials?—Yes, the landlord finding the materials.

Is it usual, at the expiration of the tenancy, to remove buildings?—No.

The whole improvements that take place are at the joint expense of the landlord and tenant?—Yes.

Chairman.] What materials does the landlord find generally?—They only find bricks and tiles and timber.

For the construction of buildings?—Yes.

In the case you have mentioned to the Committee of the unfortunate loss in your family, are you of opinion that there will be a very considerable loss to the estate of the late tenant for the want of compensation for improvements?—We have had it now upon our hands three or four years. We have been draining every year, and the landlord finds pipes or tiles; we have been farming the farm well. It is generally understood that that proprietor never turns anybody out of home, but families seem to live there for ever.

Mr. Newdegate.] The families have continued on the farm from generation to generation?—Yes.

Mr. Stafford.] Is that a merchant estate?—No, it is not.

Mr. Newdegate.] Is it under lease?—No, under tenancy at will.

Mr. Stafford.] This is an exception to the general rule?—Upon that estate I think it is.

Mr. Colville.] You stated that you think the best description of agreement is a lease with a tenant-right?—Yes.

Has it never occurred to you, that in letting land on lease for a number of years, the person may die who originally took it, and that it may fall into the hands of persons who will not farm it well, or that the persons who originally were farming it well may fall into bad circumstances, and therefore cannot continue to farm it well?—That may be; but taking the majority of cases in England, I am of opinion that it would be a capital thing for the kingdom.

Has it ever occurred to you that in giving a tenant-right there is this objection, that the in-coming tenant has to pay a large sum for the tenant-right at a time when the greater part of his capital is required to purchase stock to get into the farm with?—That is my notion about it: it would not take so much money as people think.

You do not know the amount that the tenant-right has been valued at on any farm?—I have put it in figures; and, according to my notion, it would not come to so much as many people think it would.

Have you calculated what the tenant-right is worth in the farm you have just given up?—No: I abstained all the winter from artificial manure.

Mr. Hayter.] If you had had a lease with a tenant-right, why could not you have incorporated into that a clause in the shape of tenant-right?—It could be done.

It is merely a lease with that species of covenant you mean?—Yes.

Those are covenants which it is desirable to have incorporated in a lease?—Supposing the tenant uses 1,000lbs. of cake on part of this farm, and those are to be paid for again by corn, that has to run over six years, oil-cake ought not to be calculated for more than six years; then that 800 or 1,000lbs. of cake used upon that part of the farm would not make it come to so much money as some people think.

There would not be any difficulty in incorporating that in a covenant in a lease?—No; but an act of Parliament is more effectual.

Sir C. Lemon.] That would run up to a very considerable amount, taking, as you said, about £5 an acre to marl the land?—Yes.

You calculate that lasting some years?—It will last 30 years, the chalking.

If you are to be remunerated for that, a certain proportion of that £5 an acre would form a part of the compensation?—I should say that what I speak of now has been running on 21 years.

Supposing a person five years before had marled a certain estate?—That would come to something besides, certainly; but he would leave it in the end of his lease.

That would be a large sum to take out of the tenant's pocket who came to the farm?—He would be very glad to pay it.

Mr. Newdegate.] You said that you thought that an act of Parliament would be required to give this compensation, but at the same time you stated that you thought that it might be obtained by a covenant in the lease; how could an act of Parliament be required, if the compensation was granted under the covenant in the lease, which has already taken effect?—That must all depend whether, upon different calculations, it is to be six years or ten years or five years, or whether the drainage is to be effected in three years or ten years; they should make it so in the lease.

Then the act of Parliament would not be required?—You could not have it carried out without an act of Parliament.

Mr. Stafford.] Why could it not be carried on without an Act of Parliament?—I do not believe one man in ten dare go and ask a landlord to give him a tenant-right.

Mr. Newdegate.] Why is that?—He would turn him away directly. I know a great many landlords, if you were to go and ask for a tenant-right, who would give you notice to quit.

Mr. Stafford.] You mean a lease?—You must have an Act of Parliament to make it effective at all.

Would not he ask you what you meant by tenant-right?—Yes.

Would not that resolve itself into a lease?—No landlord would give it you.

Mr. Newdegate.] Supposing a landlord to have the fee simple of the estate, and to grant a lease, with clauses for compensation, would not the tenant be able to recover under the clauses of that lease?—No doubt about it.

You stated that if a tenant was to require those clauses, he would not obtain a lease?—Certainly not.

Would the land remain unoccupied?—No; it would go into other hands.

Do you think other parties would be found willing to take the land without those clauses?—I know land let without the clauses. I want to see the tenure as well secured as possible.

And what you want is an Act of Parliament, to render it imperative upon the landlord to grant leases of land under certain conditions prescribed by law.—Yes.

Mr. Colville.] Would you make it retrospective?—Yes.

Mr. Newdegate.] You would invalidate every existing agreement and lease?—Yes.

That would result in this, that the land would not be let according to the value set upon it by the owner, but according to arrangements made by the law for the purpose?—It would be let according to the valuation, but not as to covenants.

Mr. Stafford.] As to the rent it would?—The landlord would choose his own tenant.

Mr. Newdegate.] With regard to all arrangements respecting compensation, those should in your opinion be made by law, not by the owner of the property?—Yes.

Mr. Burroughes.] Would that make it imperative that the rents should be paid quarterly, as in Essex?—I think it ought to be so in all cases.

Not permitting any arrear?—No arrear should be allowed over one quarter, unless the landlord thought it proper.

Then, in putting it into the hands of the Legislature, and taking it out of the hands of the landlord, would you make it imperative on the landlord that he should let his land subject to certain covenants?—Yes.

And the Act of Parliament should make it imperative to pay the rent quarterly?—Certainly it should.

Mr. Stafford.] Your interference with the existing arrangements would go so far as to completely over-ride them, and to permit a landlord to eject a tenant who had a lease?—Yes.

Therefore, if it were not binding upon the tenant, it could not be binding upon the landlord?—No.

Therefore, a landlord would be enabled to eject his tenant, though he had a lease?—Yes, certainly; but he would have to pay the tenant-right.

Mr. Henley.] You said you wished the law to be made retrospective?—Of course I should like to see it effective at once.

Suppose a tenant had taken a farm upon a lease, at a very low rent, under conditions that he should make those specified improvements, such as drainage; do you think he ought to be paid for those improvements?—Certainly.

Having held the farm at a low rent, in consequence of stipulating to lay out money upon it?—I think the man would be damaged in his bargain; he would not have got his *quid pro quo*.

Supposing a landlord, granting alease for 14 years, at a low rent, upon a condition that the tenant should expend money in draining his farm, according to your view he should be repaid his money, although he had already had the benefit of it in the lowness of his rent?—He should be paid what he had got in the soil at the moment, supposing he had laid out a vast deal of money.

But where he has been paying a lower rent during the time as a consideration for his laying out that money, then he has got nothing in the soil, has he?—Take it at seven years, and then he has got a good deal in the soil, in anticipation that he is going to get something back.

A man taking a farm is the question, at a very low rent; he making covenants that he will lay out a certain amount in drainage, can have nothing in the land at the expiration of his lease, can he?—Of course not at the expiration of his lease. I thought the question referred to the middle of his term. I say if he is paid for all his improvements, that is sufficient: the landlord will be benefited, and of course would let his land for more money.

You say you would make your law to go backwards as well as forwards?—I should supersede all agreements, and begin afresh.

Then a tenant with a 21 years' lease, at the expiration of 14 years, if you make this law, would be entitled to receive back the amount of drainage he has covenanted to do under his lease; though he may have held his farm 14 years at a low rent in consequence of that covenant?—If you pass a law, there must be, of course, hardships in the law.

Do you contemplate that taking place?—I do not think it would be fair, but I do not see how you could avoid it if you pass the law.

Mr. Burroughes.] Are you acquainted with any other part of the country except Essex?—No.

Are you aware, or have you heard, that in the Norfolk leases it is almost always a specification, that a certain quantity of marling or claying should be done?—No, I am not at all acquainted with that.

Would not it be hard, if a landlord had let his land subject to so many acres being marled, and so much drainage being done, that the in-coming tenant should be compelled to pay for that which it was stipulated should be done as part of the rent?—You could not pass a law of this kind without individual hardship; but I am satisfied that the thing ought not to stop at this point. I am sure that one-third more corn than at this moment is grown could be raised if there were a good tenant-right; because the tenant would know what he was doing.

Have you heard such an instance as that just stated?—There would be individual hardship against the land lord.

Mr. Newdegate.] Should you see any injustice, if you gave this compensation to the tenant in the manner that you have just stated would be a boon, to inserting a clause on the other hand, enabling the landlord to recover from the tenant an increased rent, in consideration of paying the compensation?—Of course, if he has a lease, when that lease is out, with the improvements in the land, it would let for more rent.

You spoke of enabling the tenant who had improved under a lower rent to recover a certain amount of compensation?—If you annul those leases, the landlord would be open to re-let the land, which would revert afresh to the landlord.

Your proposition is at once to annul every lease?—Yes, certainly.

Sir Charles Lemon.] Would not that be a great hardship upon many tenants?—Yes, I admit the fact. You cannot legislate so extensively without injury to individuals.

Mr. Stafford.] From the date of the passing of your Act, or from any time specified in the Act, the whole of the land of England would be under a tenancy at will?—Yes, all the land of England would be under a tenancy at will.

And in the new market for letting?—Yes, of course.

Evidence of Mr. Richard Croft Chawner.

Chairman.] You reside in Staffordshire?—I do.

You are the President of the Burton-on-Trent Farmers' Club?—I am.

As a member of that club, have you made yourself acquainted with the present state of farming in that county?—Yes.

What is the custom of giving up and entering upon farms in Staffordshire?—The incoming tenant pays for the grass seeds; he pays also for any tillage that may have been done to the fallows, and he divides with the incoming tenant for the wheat crop; he takes half where it is a brush crop, and he takes one-third where it is a fallow crop; the incoming tenant also pays for the manure, and for the straw and hay, at the consuming price, that may be on the farm at the time.

What is the period of entry?—Lady-day.

Have you any naked fallows in Staffordshire?—There are a few. In the north, the district on the clay, there are some considerable fallows.

For wheat fallows, where it is a naked fallow, the outgoing tenant takes two-thirds of the crop?—Yes, where it has been really a naked fallow during the whole of the summer.

What you call a brush crop is a crop of wheat that does not follow a naked fallow?—Yes, under any other

circumstances, after clover, roots, or green crops of any description.

Have you any compensation for the use of artificial food or artificial manure, or drainage in Staffordshire?—No, the tenants fall back upon the custom of the district, and those customs probably were fixed when nothing was known of artificial food or artificial manure.

Is it your opinion that in consequence of that want of compensation the farming in Staffordshire is not so high or so productive as it would otherwise be?—Certainly, that is my opinion, that the custom upon which they rely, and which is the only protection they have, is not a sufficient protection to induce them to farm so highly as they would otherwise do.

Is there much land that you are acquainted with, that requires draining?—There is a great deal of land that requires draining there.

Do the landlords themselves assist in the drainage of that land?—They generally find the tiles, the tenant doing the whole of the labour.

But although the landlords find tiles generally, are you to be understood to say that a great deal of the land is undrained still in Staffordshire?—Yes, there is a great deal of land undrained still in Staffordshire

Do you attribute that to a want of knowledge on the part of the landlord, of the advantage of drainage, or the want of means to execute the drainage on their estates?—I attribute it chiefly to the want of capital invested on the part of the tenant, he not having a sufficient inducement to expend that capital.

The question is, whether the landlords in general have sufficient means to drain their estates themselves, in your opinion?—I cannot give any opinion upon that subject; in some instances they have not, very probably; in many instances they have; but I am speaking of cases where they have no leases nor agreements of annual tenancy, and in those cases there is a great want of draining, arising from the circumstance that a tenant will not invest his capital, because he has no protection beyond custom at the end of his term.

Is it your opinion that this want of draining, which you say prevails extensively in Staffordshire, would to a great extent be remedied if the tenant had security for the expenditure of his own capital in draining the land?—More men of capital, I am convinced, would at once cultivate the land.

Is it your opinion that if a tenant had compensation for the purchase of artificial food and artificial manure there would be an increase of produce, by the embarkation of more capital on the part of the tenant?—Certainly it would be an inducement; it would not be so great an inducement as a lease, but still it would be a much greater one than anything there is at present.

Is there any other kind of permanent improvement applicable to soils in Staffordshire besides draining?—There is on a large portion of the lighter soils, resting on the new red sand-stone; viz., subsoiling.

Is marling applicable to any of the soils in Staffordshire?—It is much required, but it is very expensive, and there is great difficulty in doing it.

Mr. HAYTER.] To what extent of country do the customs you have stated apply?—Chiefly to the light soils of Staffordshire, but there is very little difference in the whole county of Stafford.

Are leases prevalent there?—No they are not.

Generally speaking, the holding is from year to year?—Yes, leases are the exception to the rule.

Can you speak to the custom as prevailing generally throughout that district to which you have alluded?—Yes.

Is there any custom to allow compensation to the tenant for marling?—No, I never heard of it.

Is there any custom to allow compensation to a tenant for the application of artificial manure of any description?—None whatever.

Is there any other custom as between incoming and outgoing tenant, than the one to which you have referred; namely, the compensation for seeds, and for straw and hay?—No; I cannot remember any other.

Has this custom, to which you speak, prevailed for as long a period as you can recollect?—Yes; there has been no change in the custom, that I know of.

Can you suggest any alteration that would be desirable in addition to the customs you have spoken of?—Yes; I would restrict my remarks entirely to the tenancy-at-will. I conceive that where there is a lease or an agreement, each party must make his own covenants; but in agreements or leases he does not require any new or special law; each party would make their own covenants, and make themselves secure; but in tenancies-at-will the only protection the tenant has is the custom of any particular district, and the custom originated at a time when people scarcely knew how to cultivate land, and much capital is now employed in land for which the customs give no protection when the tenancy is at an end. I think there has grown up a practice which has proved very prejudicial to the land, and also to the tenant; which is, for the outgoing tenant to make agreements with the incoming tenant, instead of completing his contract, as he ought to do, with the landlord, in my opinion. The consequence of that is, the land suffers to an immense extent, whenever there is a change of tenancy; that the outgoing tenant is doing as little as he possibly can to the land, the incoming tenant wishing to pay, of course, as small a proportion as possible to spare his capital; I think it would be an immense improvement if the landlord stood in the place of the incoming tenant, as it would be to his interest that the land should always be kept to the highest possible amount of cultivation. The productive power should be kept up in the land to the period of the expiration of the tenancy, and this would be done if the tenant could look to the landlord for remuneration from his continuing to lay out his capital up to the time when he could not any longer receive the interest of it back, in consequence of his leaving the farm, he then ought to receive it from the landlord, who ought to make the agreement with the incoming tenant. In making the new agreement the landlord would then put his outlay in the shape of rent upon the incoming tenant and not take from him that capital he ought to have for the cultivation of his land; then the land would continue to be kept in a good state of cultivation, whereas a great portion of it now is in a bad state, in consequence of this very want of security.

You are speaking of that which would be a desirable covenant, not of an existing covenant?—Yes.

Do you know anything of the custom as to fixtures in the erection of buildings, erected by the tenants during the tenancy; to whom would the buildings erected by the tenant during the tenancy belong?—To the landlord.

Are there threshing machines and steam engines in that part of the country?—There are locomotive engines.

Are you acquainted with the customs in the adjoining districts?—No; not more than having a general acquaintance with them.

Is there any defined limit between the customs which prevail in the province you speak of, and any other customs which prevail in any other districts?—No; there is great confusion whenever a case comes before a court of law; in nine cases out of ten the judge says there is no law in it, and you must go to arbitration, and then you bring evidence before the arbitrator, which evidence is very often of a very contradictory character even as to the customs of the same district.

Mr. HENLEY.] You said something about the capital

of the tenants; are the tenants generally holding at will in Staffordshire, men of large or small capital?—I should say of small capital, rather.

Do you think it would be desirable for the landlord to pay the tenant-right on account of not diminishing the tenant's capital?—Yes, it would have that effect, and the landlord would charge an increased rent if he paid the out-going tenant.

Do you give that answer solely with reference to the supposition that the tenant is short of capital, or do you apply it generally?—It would be an improvement if the contract was always made between the two parties, without the intermixture of a third party, viz. the incoming tenant.

Would not that require a considerable amount of capital on the part of the landlords?—That would depend entirely on the extent of the tenant-right.

Mr. NEWDEGATE.] Are the leases or the agreements from year to year generally the more specific?—The yearly agreements are the most specific where they exist.

But the covenants under the yearly agreements are not generally so strictly observed as under the leases?—I am not aware of that; I should say they are more strictly observed, in consequence of the short tenure.

Then you think that some enactment is required rather to confirm the covenants of the lease than to confirm the agreement under the yearly tenure?—No enactment is required as regards a lease or an agreement, but simply in addition to the circumstances where there is nothing left to the tenant but to fall back upon the custom; if he has a lease or an agreement, he can make any covenants he likes.

Then you think that it is desirable to have the custom defined?—The custom should be defined.

You have stated that the items of agreement in the yearly tenure are generally very specific?—Yes, what few I have seen.

Do they not include any terms for compensation for improvements?—No, not to a sufficient extent; there is no general clause that the tenancy shall not cease before the tenant has had time to get back his capital. Take the case of drainage, for instance; there the landlord finds the tiles, but the labour is four times the cost of the tiles, and if the tenancy was determined in twelve months or two years from that time, he would not have the opportunity of recovering his property from the land; and there is no custom that would give him any compensation for it, that I am aware of.

You are speaking now of Staffordshire?—Yes, I speak of Staffordshire.

Supposing that the yearly agreement included special compensation to the tenant for improvements, do you not think that that would be equally advantageous to the tenant, as the same items for compensation inserted in a lease?—Yes the items would be equally favourable; but the benefit of the agreement would not be equal to the benefit of the lease.

Why do you think so?—It would not give him sufficient security to lay out his capital he could not make his calculation over a number of years.

What would it matter if he was to be compensated for any capital he laid out at the end of the year, instead of at the end of the 21 years?—I do not think he would have the same confidence, nor would he be justified in doing so.

M. STAFFORD.] That would depend on the compensation, would not it?—It would be impossible to calculate when his tenancy would be determined at six months' notice. Large works, such as drainage, might not be half done; indeed he would have no benefit from it at all.

Then he would receive the whole expense which he had laid out, would not he?—With the complete loss of his time. I do not think it would have the effect of inducing men of capital so largely to enter into the cultivation of the land by a short as by a long tenure, even if the covenants were exactly the same.

Mr. NEWDEGATE.] Then you desire by law that compensation should be provided at the termination of the lease?—Yes, at the termination of the lease I think it would be proper; and looking at the state of the land, and the relations of landlord and tenant, the object being to keep the land in a good state of cultivation by paying the tenant for his unexhausted improvements at the end of his lease or tenancy-at-will, you would better secure the cultivation of the land.

The question put to you is this, do you think it more desirable to give compensation for improvements at the end of a lease, or at the expiration of a yearly tenure?—It prevails equally, I think, in all cases where they would change from one tenant to another.

Is it not more desirable in the case of a yearly tenancy than in the case of a lease?—It is more desirable as regards the interests of the tenant.

And with regard to the improvement of the land?—Yes; I think even with regard to the improvement of the land it would be more desirable where the term was short.

Then the power of recovering compensation is chiefly required in the cases of yearly tenure?—Yes, I think it is.

Would not it be a very great improvement upon the present system of yearly tenure?—Yes, very great.

Mr. STAFFORD.] You state that no compensation could be recovered upon a dismissal at six months' notice?—I am not aware of any.

Do you think that it would be possible to compensate a tenant if there was a longer period than six months' notice given?—It would be very difficult to do it.

You were understood to say, that in the case of drainage you have spoken of, it might not be half done at the termination of the tenancy, and to that it has been said, that the tenant would receive compensation for the whole of it; you have stated that that would not be equivalent, and that it would be impossible to compensate him in such a short interval of time?—The question was put comparatively as between leases and agreements, and I answered it in this way, that you could not get the same capital into the land by agreement as you can by lease.

Have you any objection to answer the question absolutely, not comparing it with a lease, but simply taking it by itself; you say there are agricultural improvements for which it would be impossible to give compensation so long as the practice exists of giving six months' notice to quit?—I do not think I said it would be impossible, but I would say that it would not be satisfactory.

Do you think that no Bill enacting tenant right would be satisfactory that did not render compulsory a longer notice?—I think the notice is very insufficient. There are cases in which you could not compensate a tenant in six months, where he is required to change his position, to sell his stock, and to invest again; it is too short a period; in that time I do not think you could possibly compensate him for such improvements.

Could you state the minimum that would be sufficient?—I think 12 months.

Mr. COLVILLE.] In the event of any Act being passed to compel the landowner to remunerate the tenant for his unexhausted improvements, what do you think those unexhausted improvements should be that he ought to be remunerated for?—I think it could not be compulsory farther than this, that the tenant should call in a valuer at the end of his term; at first it might be rather difficult to define and limit the items; but he would have as a principle this, that where there were

improvements made by the tenant with the concurrence of the landlord, and his tenancy was concluded before he had gained back his capital, which he would do if he continued a tenant, upon that basis the valuer would charge the landlord some portion of the capital invested.

You would not wish him to be remunerated for any improvements he had made without the consent of the landlord?—No, I do not think he has a right to undertake it, if it be of a serious nature, without the cognizance of the landlord.

You would exempt from that list artificial manure and artificial food, and you would compel those to be paid for without consulting the landlord?—Yes, that would be one recompense that he would receive at the end of his tenancy from the valuer; that where he had used in the last year or two artificial manure and also cake, and by that made the manure so much better for the incoming tenant, he would receive some portion of that from the landlord in order to keep the cultivation of the land up to this point during the transition from the one tenancy to the other.

In the event of any alteration of the law between landlord and tenant, would you wish the subject of dilapidations to be considered?—Yes, and at the same time too.

What should be accounted dilapidation to the land?—I think as a general principle, when the valuer enters, he would have a description of the land; a schedule would be given him, containing an account of the cultivation of each field, and if he found the productive power of that farm was diminished in any way, he must bring it into detail and charge it, in addition to the neglected fences, and neglect of drains, and neglect of repairs of buildings.

That would not be possible, would it, with regard to existing tenancies, in many cases where tenants or their families have held the farm for centuries?—You could not interfere in any retrospective manner at all.

By what species of agreement do you think that agriculture would be most advanced?—I think myself, by long leases, with very simple covenants, always giving the landlord power to look over the farm, to charge for dilapidations; and if there were any dilapidations repeated, he should have power to determine the lease at six months' notice.

Mr. NEWDEGATE.] To whom would you refer the decision of whether he should be allowed to determine the lease or not?—The arbitrators would be called in, one by each party, who, if necessary, would appoint an umpire. I do not think there would be the slightest difficulty; perhaps the choice of the third party, who should be the umpire, would be the greatest difficulty. I think two agriculturists might do very well, but I think the third party should be some one having a knowledge of evidence.

You do not make any proposal for solving that difficulty, in case of a difference between the arbitrators?—The only proposal I could make would be, that where they disagreed and wanted on umpire, I think they might fix, say, upon the judge of the County Court; that is my notion, so far as I have at present considered the question.

Are you aware that in many cases the county courts have been absorbed in the Small Debts Court?—Yes, I mean that court, whatever it may be called; sometimes it is called the Small Debts Court, sometimes the County Court.

Do you see any objection to having such cases tried; are they usually referred to a jury at the assizes?—I have scarcely seen a case at Stafford submitted to the jury; for instance, nine out of ten are referred by the judge, and are never brought to a jury; they are always sent to arbitration.

Do you see any objection to that practice of referring them, and leaving it in the hands of the judge of assize to determine to whom the question should be referred?—I see no objection to that.

Would not that be the best means of obtaining that the umpire should be an impartial person? I think probably it would.

The Evidence of Mr. CHARLES HIGBY LATTIMORE.

CHAIRMAN.] You are a practical farmer in Hertfordshire?—I reside at Wheathampstead-place, near St. Alban's.

What is the prevalent term in Hertfordshire?—Yearly tenures are the rule; leases are the exception.

What is the custon as to the entry and quitting of farms as regards acts of husbandry?—The custom of entry is usually entering upon the fallows at Lady-day, commencing tenancy at Michaelmas following; every tenant is allowed to quit as he entered, if he can prove that entry; if not, the custom is laid down in the regular way, for a certain portion of the fallows to be given up at a certain time; with respect to the straw and manure, he quits as he enters.

Then the out-going tenant gives up the farm, and his tenancy ceases at Michaelmas?—Yes, at Michaelmas.

But the incoming tenant has no right of entering for certain purposes at Lady-day?—Yes.

For preparing the wheat stubble for turnips?—Yes, the fallow lands for turnip crops or other purposes.

He does not bring in his stock, but he has only the right of entry for the purposes of preparation for the crops that will arise when his own tenancy commences?—He has the right to stock the fallows with stock; not any other part of the farm.

Does he enter to plough up the seeds for wheat?—He has the privilege of sowing the seeds then on the growing crops.

On the barley?—Yes.

The question referred to the preparation of the clover-land for wheat; has he the power of entry to prepare it before Michaelmas?—Not till the 29th of September.

To whom does the dung belong?—It usually belongs to the farm; that is, to the landlord.

What are the landlord's claims for dilapidations?—The landlord has a claim for dilapidations, which are generally and frequently indeed enforced, dilapidations of premises, and also for waste upon the soil; if there is any injury by cross cropping or neglect of tillage the landlord has legal power, and frequently recovers compensation upon those grounds.

Do you mean when the land is fouled through weeds?—When there is grass and twitch and rubbish.

What are the tenant's claims for improvements?—He has no legal claim for compensation; I never knew an instance in which a tenant could legally enforce a claim against a landlord for any improvement; I could name many such cases of an opposite kind, and two or three which recently occurred.

Of what nature?—Of claims of landlords upon tenants for dilapidations; I could mention two or three cases that have recently occurred in the county, when compensation for dilapidations has been enforced by law, and been paid.

For what dilapidations?—Dilapidations of premises on the estate generally on the tenants quitting the farms.

That was where the tenant was bound to repair?—Where he was under an agreement to repair.

Was it by agreement or custom?—I should think the usual custom would enforce it; I am not aware of any agreement being entered into there; I know that has been obtained both in leases and yearly tenancies.

Then as the dung belongs to the landlord, has the want of security for compensation for the purchase of artificial food and artificial manure offered discouragement to high farming?—Yes, decidedly. If a tenant knew that he was going to leave the farm, it would be a discouragement to him to feel that he had no power of recovering any compensation.

You have said that the land is usually not held on lease but on yearly tenancy in Hertfordshire. Is there any difference in the cultivation of the land which is held under lease, and that which is held under yearly tenancy?—Generally there is a very great deal of difference; wherever there are leases, I think that their existence might be marked out by a stranger without his being informed of it. The difference is sufficiently striking, I think, for that.

Besides the arrangement, based upon the custom of the country, between outgoing and incoming tenants, is there any private or voluntary arrangement ever made between them?—I have known instances in which written agreements have been given, which have been repudiated afterwards in a legal sense.

What is the nature of those agreements?—They are written agreements to give compensation to the tenant if at any time he receive notice to quit the farm. They have been given in lieu of a lease, the landlord not having the power to give a lease from the entail not being cut off, or something of that kind. Such agreements have been given to induce a tenant to take the farm in an exhausted state, and to put it into good condition; and I have known those agreements repudiated.

By whom?—By the landlord and his agent.

On what ground were they repudiated?—That there was no legal claim, although as a matter of business it would be considered in honour and honesty a sufficient claim for compensation; but the law, I believe, does not recognize the floating capital of tenant farmers.

You are not to be understood to say that the landlord refused to act upon those agreements, but only that he stated whilst he did so, that they were not binding in law?—He referred them to law; he did say, "I reject the claim by law, and I will give nothing but what the law compels me."

As a matter of fact, were those compensations paid or not?—No, they have not been paid, and the expense of law suits may be sometimes greater than the produce, and in some instances that would deter men from seeking the compensation. I have never known an instance where it has been attempted successfully.

What is the extent of your own farm?—I do not occupy more than about 300 acres, some portion of my own.

Under what tenure do you hold?—I hold under lease; I hold no land except my own under a 21 years' lease.

In consequence of this greater security of holding, have you improved the farm you occupy?—I endeavour to do so, by always laying out money, whenever there is a prospect of getting remuneration in any way for it.

In what manner have you improved it?—In the first instance, by growing root crops; secondly, by feeding stock with artificial food, to the highest possible extent; and thirdly, by additions to the soil, &c.

And have you made improvements by the use of artificial manure?—Yes, with home made manure in conjunction. Mine is a light gravelly burning soil, and without root crops we could not make it grow corn by any amount of manure.

Has this enabled you to increase the amount of labour employed on your farm?—Yes; I apprehend that what I pay for labour is as high, or perhaps higher, than the average of the kingdom; I pay from 40s. to 50s. an acre on arable land of that description, which is an amount we consider very high; it is more than double the rent.

Is that much above the payment for wages on farms with no security of tenure?—Yes, I believe the average of my parish does not exceed the rental, or something like it, in the case of those farms held under annual tenancy, I mean something like a pound per acre; there is a small portion held on security in my parish; and where they possess security there is a good average crop (leaving out my own as an exception); I have made inquiries, and I find they pay 30s. per acre there.

And how much on the land without security?—I could give you the average number of labourers resident in the parish; I could give you also nearly the amount paid, and prove to your satisfaction that it is impossible there could be anything like that amount paid upon that portion destitute of security.

Have you increased the quantity of stock upon your farm?—Yes; my plan is to keep as much as I can possibly maintain upon it.

To what extent have you increased the stock?—I generally feed off about two-and-a-half head of sheep, besides bullocks and pigs. That is, on 300 acres I should have 750, and that would be an increase of 100 per cent. on the usual average of the kingdom.

Is your farm on the four-course system?—Yes.

You feed 10 sheep an acre on your turnips?—Quite that or more, including a great many lambs fatted off.

Should you feel justified in carrying out this high farming on a yearly agreement without compensation for improvements?—Certainly not; I should be considered, as I have been called in former instances where I had no lease, a madman, or a fool, or something of that kind, to make such an improvement of the land only to increase the rental.

You have carried out that system upon land without compensation?—I have, and suffered for it; it will be a lesson to me for life. I would never advise any neighbour of mine to attempt to follow that. It is usually the case, if a man has improved the land, he is made to pay a large rental in consequence, and subjects himself to all sorts of annoyances; but he never repeats the thing, without security.

Notwithstanding the liberality and honourable conduct of the English landlords, are there not accidents by which a tenant, relying merely upon the honour of his landlord, may be defeated in his prospects?—Yes, undoubtedly; for instance, upon the death of the landlord; I have known instances where landlords feeling that, and besides feeling the great risk which their tenants ran in making this outlay, and looking to the uncertainty of their lives, have in justice felt that they were bound to grant leases, and have done so. In fact, I think it would be very imprudent for any person to make any large outlay in creating what I may call a new soil, without having leases or security of some kind.

Have you ever known that where a landlord has been liberally disposed to act fairly by his tenant, the

death of that landlord has exposed that tenant to loss?—Yes, where rents have been raised in consequence immediately, and several tenants have been obliged to quit.

Did those tenants quit the land without compensation for the improvements they had made?—Yes, generally they have no legal claim to compensation.

Do you think that the improved modes of husbandry can be carried out without compensation to the tenants?—They never can to any extent. They may in certain spots, and individuals will be obliged to pay for them, as I have done; and I am sure it will be an effectual bar to any generally improved system of cultivation, unless there be security.

Do you think that this compensation would be any disadvantage to the landlord?—No, I believe the landlord would be the greatest gainer ultimately, because his land would always be in a prosperous condition.

Is it your opinion, that the produce in your neighbourhood, and also the employment of the labourers in Hertfordshire generally, would be improved if the right of the tenant to compensation was legalized?—I feel assured that it would, and I could give my own immediate district as a proof of it. In the parish in which I reside there are 27 farms; there are six held by the owners, and three by leases, with full power over the soil as regards game, &c.; those farms that are held under security are well farmed, the other 18 are yearly tenancies. Those held under security form one-fourth of the parish, the others are the remaining three-fourths, and there is as much stock kept upon the one-fourth as there is upon the other three-fourths; there is double the amount of stock fatted off the one-fourth, and there is 58 per cent. more labour employed on that one-fourth; and there is one-third more grain produced on it per acre; while the changes of occupancy have been as 9 to 13, and 18 to 49. The other land is equally as good, but it is not so well cultivated: that has been the result of these customs and conditions for the last 25 years.

You have an extensive range of chalk hills in Hertfordshire. Is chalking found an improvement on that land?—We have no immediate chalk hills there; it is dug out of the soil, some as low as 60 feet; the chalk hills do not immediately lie on that part of Hertfordshire.

Speaking of Hertfordshire generally, is chalking found an improvement in that county?—Yes.

Is it not carried out to the full extent?—Only in certain spots, in very small spaces.

Is much drainage required in any part of Hertfordshire?—Yes; there is a considerable portion of the county requires drainage.

In the northern part?—Yes; in the northern part, a great part has required drainage.

So far as you are acquainted with the farmers, do they feel a necessity for increased protection, in order to the outlay of their capital on their farms?—Such a feeling is gaining ground, and they are becoming more and more convinced of the indispensable necessity of it.

Do you see any difficulty of making an arrangement between the outgoing and incoming tenants, as to compensation for improvements?—Not the least in the world; and the best proof we have is this: I have known several instances lately where individuals have resigned their leases, that may have many years to run, to other farmers; I know of three where such an exchange has taken place; I know all the individuals, and I beg to say they never had any difficulty in making such changes, or in arranging as to the draining, chalking, claying, subsoiling, stock feeding, or any of the other questions that can occur, or which have occurred in those instances; one tenant has walked out, and the other tenant has walked in. The plan is this: a valuation takes place, nothing whatever is said, the money is paid, and all parties are satisfied; and if we can have tenant-right carried out between individuals, there would be no more difficulty in making the landlord one of the parties, and so there would be no difficulty in it at all. It is payment made for value received. No man would expect a landlord to pay for what he had not value received; and if the crops are increased in value, the party making the improvements ought to be paid for them; in that way there can be no injustice done.

You would make the landlord responsible, and you do not see any difficulty in making such arrangements?—No; if the landlord is going to occupy the farm he will still have the value; and as I have observed, if he is not going to occupy it, it is made more disposable, and therefore it is making the property more valuable.

Mr. Newdegate.] In a part of your evidence you have referred to the existence of some feeling in Hertfordshire which appears to be tantamount to custom; what district do you refer to?—There is no custom that gives the tenant anything in Hertfordshire.

The question referred to the happy state of things in which you said that there was no difficulty in obtaining compensation?—There were three instances in which gentlemen transferred their leases or holdings to neighbours, on giving compensation.

Where was that?—In Hertfordshire.

What district of Hertfordshire?—One is at Flamsteadbury; another case was the Lodge Farm, King's-Walden; and another, the Bury Farm, Wheathampstead. In two of those cases a lease existed, and in the other it was a yearly tenancy, but it was just the same; there was no difficulty; the landlord consenting thereto, and no agent or middleman allowed to interfere.

That which you seem to desire most is an increased facility for recovering compensation for improvements?—Yes, I think what we require is, that the law should hold the balance equally and fairly between the landlord and tenant. I have already said that in several instances lately the landlord has brought a claim for dilapidations against the tenant, and in each case he has recovered it; but I never, on the other hand, knew of cases, and I have inquired of all the valuers and practical men in my county; I never heard of, nor knew of, instances in which the tenant recovered if the law was disputed. Many of our landlords are good and just, and do not dispute; but where they do, we never get compensation. I want the law to be equal between the two. That if it is fair that the landlord should have the power (I do not object to it) of suing his tenant for dilapidations and waste of property, it is equally just that the tenant should have a similar claim upon the landlord for improvements.

That comes to this, that what is desirable is increased facilities for recovering compensation for improvements?—To put us on an equal footing.

What you desire is, increased facility for recovering compensation for improvements?—Of course we do; we require increased facilities. We want the law to be as simple on our side as it is on the other; there is no difficulty in the landlord recovering for dilapidations.

Is the law in the case of dilapidations in all cases effectual in favour of the landlord?—I say that the law has given the landlord the power; it is a simple law of debtor and creditor, and if appealed to, the law will give a verdict at once in accordance with the evidence.

Should you be satisfied if the law give the tenant

power to recover summarily against the landlord?—Certainly. I take it as a law of debtor and creditor; I say, that the law, when appealed to, should hold the balance even between the parties, giving compensation for damage on the one side, and for improvement on the other.

The question is this: supposing the landlord were to be insolvent, would you let the tenant suffer the same loss that the landlord does at present under the law where the tenant is insolvent?—You cannot make a private law of exception in any kind of property; all kinds of property should stand on the same footing. I should be satisfied if the tenants had the same justice which is open to other creditors. If the landlord is insolvent there is the estate, and the tenant's claim is as good against the landlord as the landlord's claim is against the tenant; they must take their chance.

Are you aware that if the estate is entailed, that the tenant would have no power of recovering against the landlord's executors after his death?—That is speaking of the law of entail. I do not think the claims of the tenant ought to suffer in consequence.

Will you be so good as to answer the question? are you aware that where the landlord's estate is entailed and he becomes insolvent and dies, that the tenant would have no power to recover any more than the landlord has the power to recover against an insolvent tenant?—I should be quite satisfied with equal justice.

Will you answer the question? do you know that that is the fact?—I do not know that that is the case.

Will you be so good as to state whether the custom in Hertfordshire is not in some cases extended to compensation for drainage?—I know of none where legally it can be enforced; nor where it is likely to be enforced.

Have you known instances where agreements have been repudiated by the landlord?—Yes.

If the agreement had been taken into court, would not the tenant have had power to recover under it?—We find in those instances that it might be enforced; but from the difficulty and the technicalities of the law, and the want of that legislation which I have before alluded to, the tenant farmers do not resort to that. I could never find a lawyer who could tell me what statute it is in, or point to any clause that is to be found relating to tenant farmers' capital. I do not know such a phrase, and for the want of this legislation, I say he cannot recover.

Still you do not meet the question; you have stated that you have known instances in which there have been agreements to give compensation for improvements, that they have been repudiated by the landlord, and that they have not been recovered, and you were asked why was not that compensation recovered?—In consequence, I consider, of the landlord repudiating the agreement, and the deficiency of the law preventing the tenant recovering his compensation.

Then you mean to state that the law would not enable a tenant to recover under a specific agreement that to which he was entitled?—If the landlord was a dishonourable man, I believe he could set that agreement aside; and either from want of means, or want of nerve, or want of courage on the part of the tenant, such agreements may be, and have been defeated.

Did that loss arise from the deficiency of the tenant in courage or justice to himself, or from any inapplicability on the part of the law?—I have said from the want of legal recognition of the capital, and the want of law giving that protection to tenant's floating capital that it gives to fixed capital.

What has legal recognition of capital to do with the terms of a specific agreement?—In a court of law there must be some power of recovery.

In what does an agreement for compensation differ from an agreement to pay any sum between two individuals?—An agreement in commercial matters limits it to things tangible by law. Commercial property and agricultural property are very different matters. In manufactures an agreement would be recognized by law, but I do not know such a thing as floating capital of the tenant farmer, and I say that there is no such legal phrase that I am aware of.

Are you aware that it is perfectly possible to recover at law a pepper-corn rent?—Perhaps there may be. The landlord has full security in every way. I think rent may be recovered in every shape.

Do you know that if bound by agreement the tenant could recover by law a pepper-corn from the landlord?—No, I believe there would be more difficulty in the one case than in the other. I do not say it would be impossible, but I say that I think there is much greater difficulty in recovering in the one case than in the other.

In fact, if an agreement subsists between the landlord and the tenant, that agreement is not applicable by law in favour of the tenant, although it would be in favour of the landlord?—I think the power of recovering on the part of the tenant is very inferior to the power of the landlord recovering against the tenant; the law does not hold the balance between the two fairly.

Then would you state generally that the law of England is so constituted that there is no power of recovering in favour of the weaker party?—It is a difficult process, and the law does not give that security to the one party that it does to the other.

Your answer applies to compensation under the terms of a special agreement?—I have said once or twice that I believe the tenant does not stand upon fair terms with his landlord.

Does what you state apply to compensation under the terms of a special agreement?—It would be very difficult to recover the compensation under the present state of the law. I do not say that it would be impossible. I speak from experience.

Then your impression is, that as the law stands, one party can recover under the terms of a special agreement, and the other party cannot?—You may construe it in that way; the difficulty is so great, that it is almost an absolute bar. I never knew an instance where it was recovered by the tenant-at-law.

Did you ever know an instance where it was tried?—Yes.

In court?—By law; that is, by legal process. There was a case that would have come into court the other day, but that was settled at the last half hour; there have been instances brought into court; in my boyhood I recollect such an instance.

Of late years have you known an instance under which it was impossible to recover compensation under a specific agreement where it has been tried in court?—I have never known anything recovered. I have known it attempted several times.

Have you ever known a case tried of late years?—Yes, there have been cases tried some time ago, not very recently. That case I alluded to was settled at the last moment, or it would have come on this last term; but there have been several cases tried.

Cases you have known?—I recollect one or two perfectly well.

And in those cases there was a specific agreement, and it was found impossible to recover compensation?—I am not speaking of a specific agreement; I have known cases tried by legal process, and the compensation was not got. I have not known an action by speci-

fic agreement, but damages by the landlord have been recovered.

Your first statement was in relation to specific agreement?—I said I knew where such agreements had been repudiated, and I said by law it would be almost impossible, the difficulties were so great, to recover compensation; that the tenant would be prevented from recovering, and it must be considered an effectual barrier.

Might not it be the case that the claim to be recovered was not worth the litigation?—I never knew anything recovered on the part of a tenant against a landlord.

In cases in which a tenant has attempted to recover against a landlord and failed to proceed, were those cases in which the sum to be recovered was not worth the litigation?—I should say in the instance I especially alluded to, the claim would amount to something like two years' rent, which would be substantiated; and two years' rental upon a farm ought to be sufficient to cover any expense of litigation thereupon.

In that case was that under a specific agreement?—Yes; I can give you the clause under which it is claimed. If the tenant A. receives a notice from his landlord B., he having made extensive improvements, then two men of business are to be appointed, to decide in the usual way what the tenant is entitled to.

In that case did the arbitrator award to the tenant special compensation?—The arbitrator on the part of the landlord refused to agree to a referee, or to go into it by other arbitrators, and a third party was chosen; the landlord then repudiated, and refused to act upon that. He did appoint an arbitrator, but he refused to go into the arbitration by the appointment of the referee. I do not say he could escape the penalty by the refusal of his agent, but the law becomes a dead letter except by action.

Was the action instituted?—An action was brought to recover damages.

Did that action succeed, or did it fail?—It so far failed, that it has been three years and a half on the tapis; there have been all sorts of demurrers raised upon the point of law, and there is no reasonable hope for success; there is very little chance of success; the law is against the tenant, and therefore the prospect would not be very bright.

The case has not yet been tried?—No; the opinion of lawyers is that there is no law to recognize a tenant's claim.

That case has not been tried?—No; it has been, as I have already said, pending three years and a half.

Then what you have stated seems to come to this, that there is a necessity for urging facilities to recover compensation under agreement?—Yes; that the law should be simple and distinct.

Should you be willing to put claims for dilapidation under the same category?—Yes; equal justice to both parties is all I ask for.

Have you formed any opinion as to the kind of court that should decide those cases?—I do not know that we want a separate court for them; I think the less we have to do with law the better; they are generally left to arbitration at last; the legal gentlemen understand the law, and we understand the practical part better than they do.

You are speaking of cases under agreements, the interpretation of which is defined by gentlemen of the law; have you formed any opinion in case of difference of opinion between the arbitrators, as to whom those cases should be referred?—My own mind is this, that if the law were simple and clear, so little reference to the law would there be called for, that the judge of the County Court would be sufficient, and it would be a less expensive process too.

You are in favour then of referring those cases to the judges of the County Courts?—I think it might be fairly done; it is a suggestion of my own; I think it would be simple and unexpensive.

Mr. HENLEY.] You have stated that in the parish in which you live a certain portion of it is much better farmed than the other part?—Yes.

That part was held under lease?—It is held by the owners or with security under lease; I hold mine under a 21 years' lease; men holding land from generation to generation as their own property have security.

That has secured this high cultivation?—It is high cultivation compared to the other.

You have also stated that in three cases you have named arrangements have been made between the incoming and outgoing tenants as to the payment of money, two of which cases were under a lease, and one under an agreement?—Yes.

You have stated also, that in one case you named some litigation has taken place upon the agreement, and is now going on and is not decided?—Yes, I have.

That was a case of arbitration, was not it?—The agreement expressed arbitration as the means of settling the differences in the event of the tenant's receiving notice.

And the litigation has taken place in consequence of one of the arbitrators declining to do anything?—Yes, declining to do anything.

And the tenant has by that means lost his remedy?—Yes, but he has the law.

In the event of what is called tenant-right being to be decided by arbitration, and the arbitrator declining to do his duty, what better position would the tenant be in then?—If the party refused to act, another individual ought to be appointed to take his place, or the case decided without him.

If there is a law to make the arbitrator do his duty it would be a general law?—We should have no difficulty more than in the County Court; it would be equally simple.

Tell the Committee, if you please, in what way you would propose to make an arbitrator of tenant-right do his duty, when an arbitrator under agreement has refused to do his duty?—The landowner should be compelled to do his duty. If the landlord, under the present state of the law, chooses to say "The law is in my favour and not in yours, I will not give you anything unless the law compels me," he can do so, and by so doing he sanctions this dereliction of duty on the part of the arbitrator, and abets the injustice.

Tell the Committee, if you please, in what way you would propose to make an arbitrator of tenant-right do his duty, when an arbitrator under agreement has refused to do his duty?—The deficiency of legal recognition of a farmer's floating property now places him out of court; then, I say, he would be in court, because the balance would be in favour of the farmer's floating capital being recognized.

What has the recognition of the tenant's capital to do with the neglect of the arbitrator to make the award?—It has this to do with it, it gives him a legal standing which he has not now; the agricultural tenant has no legal existence unless he has a lease, and that only gives him security of tenure.

Do you suppose that the agricultural tenant has no remedy by the covenants of his lease against his landlord?—Yes, as to tenure.

Not speaking of tenure, but speaking of covenants?—As to covenants for improvements, I should say he has not.

That is your opinion?—Yes; yet at the close of his agreement, he may attempt to enforce it by law; an honourable man would never object to fulfil his covenant.

Is it your opinion that a tenant with covenant, compelling the claim, has no remedy against his landlord?—I do not say he has no remedy, but a yearly tenant has none; it may give him power to recover under special covenants.

Speaking of the covenants under a lease, how should you propose that the arbitrator to be appointed to settle tenant-right should be compelled to act? State to the Committee if you have any opinion how an arbitrator, who declines to do his duty, could be compelled to act?—The law would compel the settlement of the question, but now the law takes no cognizance of the one party; there would be no difficulty in a clearly defined system of tenant-right in each party getting justice.

You have told the Committee, that in the case alluded to under the agreement, the tenant lost his remedy because the arbitrator would not act?—I said, there was no law for him, and the arbitrator who refused to act might think so; that might be his inducement not to act, knowing there was no law for the other party.

Arbitrators can only decide upon matters referred to them by special agreement, or by law? — An arbitrator in any other case would have acted in a different way if the two parties had been upon a legal footing; the only disparagement is the disparagement of law.

The difficulty is in making an arbitrator act?—There would be no difficulty if the employer was disposed to act justly.

Why should not a man be as dishonest under Act of Parliament as under agreement?—He must act then.

Why?—The law enforces the attendance of witnesses in cases of debts and other matters.

Suppose the arbitrator refused to act, what would your remedy be?—I say that if the law was decisive, or the landowner had been honestly disposed, he would not have suffered his agreement to have been violated through the perverseness of any individual.

Why should he be more honourable under an Act of Parliament than under a signed agreement?—He is compelled.

Why is he compelled?—The law will compel an arbitrator to act in the case of dilapidations, or it will make the award to the other party; and I complain that we do not stand upon equal terms, and I believe if we had that power, there would be no cause of complaint on either side.

If the landlord and tenant make an agreement to settle a dispute by arbitration, do you say the law would not enforce the award made?—I said there was a means of deciding the agreement, but that there was a deficiency of law.

What are the means of deciding the agreement?—Simply the means which are employed in matters of debtor and creditor in the County Court, which would not be equally available; there are those means of deciding.

What are the available means of deciding?—I say there is a deficiency of the law; I ask to have this thing set right, that the tenant should have an equal recognition and security by law for his property, that the landlord has in his claims against the tenant.

You say that the difficulty in the case you have alluded to arose from the arbitrator not acting; how can you compel the arbitrator to act under a tenant-right?—If there was any law to legalize the claims of the tenant, it could be enforced, and the case settled by the evidence of the other party; but as there is no such law, I maintain that he has not the power of enforcing it. It is matter of opinion; but I say there is no law containing a clause recognizing the tenant farmer's capital.

In your opinion, an arbitrator appointed under the authority of an Act of Parliament, would be more easily compelled to act than an arbitrator appointed under special agreement?—Yes; because the Act of Parliament would give cognizance, which the law now does not. If we had the Tenant Right Bill, the law would take cognizance of the property and capital of the farmer.

Suppose you had an award made under an Act of Parliament, how would you propose to recover the money?—By the same process as other debts are recovered; I want no special power of recovery on the part of the tenant; he must take his chance as the landlord must against the tenant. If the tenant fails, the landlord takes his chance; if the landlord fails, the tenant takes his.

In your opinion, should the remedy be against the landlord or against the incoming tenant?—Against the estate; no doubt the incoming tenant would have to settle it; but, as I observed, the remedy should be against the estate.

Having a legal remedy against the estate, against whom do you propose to take it, against the occupier or landlord?—The owner of the estate must be responsible for his own property, as the owner of the floating capital is responsible for dilapidations.

Then you would have the remedy against the landlord?—Yes; where I receive any improvements made upon my estate, that estate having the value of another man's goods, ought to be bound to make compensation.

Having your remedy against the landlord, how would you propose to make him pay?—In the same way as other debts are recovered; I think it is a question of simple debt.

Have you formed any opinion how you would proceed?—I think it should be recovered as other debts are.

You say you would go against the landlord; supposing the landlord to have left the country, and that there is no tenant in possession, how would you deal with that case?—I say the claim would still be against the estate, that is, against the owner of the estate; you could not sue a stranger for it.

How would you get your money, supposing the landlord to be in Paris, and the estate is let to a new tenant?—By the same process that any other debt could be recovered of that individual.

You would not in that case come upon the succeeding occupier of the soil?—Certainly not; he could not be accountable for the debts of another man.

Who would have the advantage of the unexhausted improvements in that case?—The man who owns the land undoubtedly, let him be who he will.

In the event of an insolvent having broken upon a lease, and his assignees entering into it, who would have the benefit of it?—I think that must be settled in the usual way; I think the just claims of an individual for improvements made for the benefit of the landlord ought to be recoverable; then if the tenant failed it would be from his own misfortune.

How would you propose that the tenant should proceed to get his money?—I should say that the tenant, un-

less he was a very illiberal man, would be satisfied with the usual process of recovery. I never heard of a tenant who would want an exceptional law in his favour. If the law would put him on the same footing with the landlord, there would be the same advantage for all parties.

The landlord comes for his rent upon what is on the land; do you think the tenant ought to come upon the succeeding occupier, or against the landlord as for debt?—The tenant's claim is upon the owner of the estate, or the party receiving the rent.

Should you take it as a debt?—Yes, it is a debt due from the estate.

The security to the outgoing tenant would be much less in that case than the other?—He would stand upon the same footing as the other creditors; and if the landlord were put upon the same footing, the tenant would be satisfied.

He would not have his remedy against the man who has the benefit of the improvements?—No, not if there was a landlord; but I say the man who takes the rent is the nominal owner, and receives the value of the improvements in the enhancement of rent.

Then you would prefer having the remedy by debt?—I am satisfied with the usual process of recovering debt. I should not want an exceptional claim in my favour.

Are you content with the security you have under your 21 years lease?—Yes, but not to farm as I do now at the end of the lease; we have now no recognition of security, and as the landlord gives you nothing at the end of the lease, two-thirds of the time of the lease are occupied in getting the land into good condition, and the last part of it is occupied in getting it out again, so that not more than one-third of the time, even under leases, is the land farmed in the highest way; that is a great loss to the country, and must be a serious drawback to the labourers. I could prove, as I have said, that the amount paid for labour on three-fourths of the land in my neighbourhood is not equal by 58 per cent. to what has been paid on the other portion farmed under security.

Of course there is more labour under high farming than under low farming?—Yes; and there also is a greatly increased loss from the want of the additional produce of the land. It is a system of poverty from one end to the other. The landlords do not get rich, the tenants are poor, and the labourers are occasionally in a state of semi-starvation.

Yet you say that this high cultivation has taken place at present under lease, and you have told the Committee that from circumstances which have occurred, parties have by their own agreements in these matters passed the farms from hand to hand with perfect satisfaction?—By private agreement between two farmers; there is no difficulty in ascertaining the amount of compensation.

And that might be done with a valid agreement, if parties were disposed?—It will never be done so under the present system.

Do you think it is possible that it might be done?—If men were all honest we should not want courts to recover debts.

CHAIRMAN.] Are you aware whether in point of law owners of settled estates are able to make agreements to bind their successors in possession of the land, unless it correspond with the custom of the country?—Yes, I believe they are unable in some instances to do so, and I know where leases have been peremptorily refused by landlords in consequence; all we want is, to have security to the tenant, and I hope that part of the law will be amended.

Evidence of EDWARD CARTER HUGHES.

CHAIRMAN.] You reside near Hythe, in Kent?—I do.

Are you an occupier of land?—I am.

To what extent?—I occupy between 400 acres and 500 acres.

Have you any other occupation besides the cultivation of land?—None, but I do not live wholly by my farming.

What is the custom between out-going and in-coming tenants in your part of the country; at what time is the entry?—At Michaelmas universally, except in case of decease; in case of the decease of the person in possession holding for life.

Is the general holding from year to year?—The tenure is generally from year to year.

What does the in-coming tenant pay for?—The manure is considered to be the property of the landlord; the feeding properties of the straw, and also that of the hay, are considered the property of the tenant, so that about two-thirds of the real value is the property of the tenant; that is what we call a feeding price.

Does the in-coming tenant have the right of entry from Michaelmas for the cultivation of turnips or preparation for wheat?—Not without a previous agreement has been made to that effect with the out-going tenant; terms of agreement from year to year are entered into, which admit of the in-coming tenant entering to prepare for wheat previous to the determination of the late tenancy.

Does the out-going tenant receive compensation for artificial food and artificial manure?—No.

Are there any durable improvements that could be made in your neighbourhood, such as drainage or chalking?—Yes, they are frequently made, but entirely at the hazard of the tenant; there is no security of custom or of anything else without there is a private agreement entered into between the landlord and the tenant that compensation shall be allowed.

Is there much room for drainage in your part of the world?—Very great.

Is chalking an improvement applicable in your neighbourhood?—Yes, to a very considerable extent; all the stiff lands are very much benefited by chalking.

What is the expense of chalking an acre of land?—It depends very much on locality and distance; we appreciate chalk highly. I should say in some instances it could be done at £4 an acre; under different circumstances it would be £6 or £7; it depends upon the distance we have to draw it.

Do these processes make a very great improvement in your land?—On a great deal of the land a very great improvement. I have heard of its being clearly seen 20 years afterwards.

You are not very far from the chalk hills?—No.

In some parts it is found that the soil lying upon the chalk is a benefit, in others it is not a benefit; how is that in your part of the county?—I do not occupy land upon a chalk subsoil; but I have heard of chalk doing good where the land has been stiff, and resting on a chalk subsoil.

Do you think it is a hardship to the tenants to have no security for their capital laid out in such improvements as those?—I consider it a great hardship and an injustice.

Without mentioning names, have you known any case of hardship arise?—Many.

Will you give the committee a notion of the kind of hardship you speak of?—A few years ago an individual took a farm not far distant from where I reside, that had been farmed by his brother-in-law, very highly indeed, under a very excellent landlord as tenant-at-will. An agreement was entered into between the out-going and in-coming tenant, that one brother-in-law should succeed the other in this farm with the consent of that landlord. The new tenant went on farming very spiritedly indeed and produced good crops at a very considerable expense; he farmed slowly, as to cropping; feeding cake and making general improvements to promote the growth of produce.

By slowly, you mean putting in few white crops?—Yes. Some little time after an election ensued, and this new tenant was asked for his vote by one of the candidates for the county of Kent; he replied that he differed from him in toto as to political matters. In fact, one was a Conservative, and the other a direct Whig; he said he could not conscientiously vote for him, but should in all probability vote for the opposing party. Nothing particular occurred for a year afterwards;

after which this individual, without any assigned reason, received a notice to quit his yearly holding, and quitted accordingly without being able to claim one iota of benefit for the large expense he and his brother-in-law had entered into. That is one instance that happened under my own eye.

Sir J. TROLLOPE.] Why do you connect it with the case of the candidate asking him for a vote?—The fact is indisputable; there was a connexion existing between this candidate for parliament, and the family of the landlord of the farm to which I allude. There had been no previous difference of opinion between the parties at all; there was the best understanding until this thing occurred.

CHAIRMAN.] Is there any other particular instance that you wish to mention?—I know of several cases where the same sort of thing has occurred, where a person has received notice to quit, and on asking for a reason, no justifiable one has been given, and where it has been attributed to religious or political feeling.

Do you think it would be desirable to give the tenant power, under proper security and regulation, to improve the buildings on his farm?—I think it would be a very great advantage.

How are the buildings in your part of Kent?—I think they are generally better than those in most other counties, from what I have observed; they are more in accordance with the quantity of land attached to them, and more fit for the necessities of the farm.

Nevertheless, you still think that if tenants had an opportunity of laying out their money, under an improved protection, for building, they would make great improvements?—Great benefit would accrue to the tenant from that, no doubt.

Sir J. TROLLOPE.] How far is Hythe from Tenterden?—I cannot say, exactly; I should say about 20 miles.

Have you a different custom in your county to that in the neighbourhood of Tenterden?—Tenterden lies in the Weald of Kent. There was one point I forgot with reference to manure; half manures in the Weald of Kent are sometimes allowed for; viz., the cartage, &c. of half manures; it is simply the workmanship that is allowed.

Are you not allowed for spreading?—Yes, and carrying out.

According to the distance?—Yes, according to the distance.

You are not allowed for the value of the manure?—No, not as a property left.

Do you know the custom of Tenterden and the Weald of Kent?—I never occupied land, nor had any connexion with land, in that direction.

You do not know the custom?—I have heard of the custom as to paying for half manures.

And are you not allowed for that?—We are not allowed for that.

Are you allowed for drainage?—No.

Are you allowed for nothing but acts of husbandry?—For nothing but acts of husbandry; the seeds sown, the turnips sown, and the workmanship thereon.

When the tenant leaves the farm at Michaelmas, is he permitted to have the use of the buildings to thresh and prepare the corn for the market?—It depends upon the agreement between the landlord and tenant; frequently he is.

Would it be possible in many cases for the tenant in a late harvest to get his corn threshed out by Michaelmas?—It would be generally so by the aid of machinery.

At great loss, probably?—At very great inconvenience.

The straw is stacked?—Yes.

Is yours a hop-growing country?—No, it is not favourable for hops; my immediate neighbourhood is not what would be called a hop district, although a large part of the county is so.

Mr. HENLEY.] You have said that in this case that you have stated to us there was a connexion between the member and the landlord?—Yes.

Is there any other reason to bring you to the conclusion that that was the cause of his being turned out, except that fact?—Only the very sudden way in which the notice was given, and the want of any reason; generally speaking, there is a reason why the tenant leaves, some alleged, or supposed reason; no other reason could be conjectured in this case.

No reason being given, you conjectured no other than that?—Not only I; but you know that such matters are generally discussed, and the general opinion was as I have stated it to be.

You are speaking of the common report?—Yes; I am speaking of the common report and of the general opinion I heard expressed.

What remedy should you propose; that is, how should you propose to secure the out-going tenant?—I am not a lawmaker, but I should think he ought to be secured upon the principle of the late Tenant Right Bill, before its modification last year.

Would that in your judgment answer your purpose?—Yes, before its alteration, which was effected by the committee when it was robbed of its power.

Taking it before that alteration, had you seen it?—Yes; I had read and studied it.

And you are of opinion it would have answered your purpose?—Yes, the first measure would have done.

Even supposing it turned out that it gave in point of fact no means of getting paid for your improvements, still it would have answered your purpose?—It would have given us means; I do not admit that it would not have given us means.

Supposing that case?—Then, of course, if it did not give us means it would have been a self-evident nullity.

That would be your view of the best mode of securing it?—Compensation was the intention of that act; if there were any lapsus in it, I, of course, do not mean to identify myself with that; but the intention of the act was clearly that of remunerating the tenantry simply for their improvements.

A provision in that, among others, was, that the party should have the power by agreement of defeating the operation of the Act?—I think not in the first instance; it was after it had been through the committee; it was not so in the first bill I saw.

The parties in the first bill had nothing to restrain them from giving notice to quit, and so defeating the intention of it?—They could not defeat the intention of it; it was prospective and retrospective both.

There was nothing to prevent the landlord giving the tenant immediate notice to quit?—There ought not to be anything to a tenant-at-will; the tenant ought not to occupy against the authority of his landlord.

That would have prevented them seeking redress?—Not if the law was retrospective; the bill was retrospective and prospective both.

Have you seen the present bill?—I have.

What is your opinion of it?—I think it not at all equal to the circumstances.

It does not go far enough?—No, it does not go far enough.

What is your opinion of the things provided for in the present bill?—I think that if it were not for one clause in that bill it would do a great deal of good.

What is that clause?—That clause which puts it into the power of the landlords and tenants to nullify the whole bill by private agreement.

That in your judgment should not be so?—That in my judgment should not be so.

What inducement would you hold out under those circumstances to persons to let their land at all?—Their own interest would induce them, I think.

Why should not their own interest induce them to make proper agreements to have the land well cultivated?—I do not know why it should not; it is very clear it does not, and facts are stubborn things. From the fact of some landlords not being men of business, and some agents not being men of business, some being capricious, and some otherwise; a great deal of injury is done from the want of security to the property of the tenant farmers.

Kent, generally speaking, is considered a highly cultivated county?—Yes.

That has grown up without any of those tenant rights?—It has grown up under leases in some measure, and in certain instances under landlords of repute, or under what we call a good understanding; that is, the confidence that a tenant will place in a man of character and probity; but although we have many good landlords in Kent, we have some who are very far from it, I am sorry to say; so that good understanding has been inadequate to the demands of society.

Yet notwithstanding there may be good and bad landlords,

as there are good and bad men everywhere, Kent, on the whole, is a very highly cultivated county?—Yes.

You are aware that in some parts of England there is a custom giving a more extensive tenant right than in other counties?—Yes.

Do you know as a fact, that that tenant right has succeeded the good cultivation, and not preceded it?—I think it is not improbable that it has so; I was not before aware of it; the tenant right is merely a custom anywhere; there is no law, but the custom becomes law.

Speaking of the tenant right of Lincolnshire, which has become law by custom, it is known that that has succeeded the good husbandry, and has not been the cause of the good husbandry?—I have heard so to-day.

Why, then, should not the same circumstances operate in your part of England, as they have done in Lincolnshire?—I do not know why they should not, but the fact is that they have not.

Yet Kent is very highly cultivated, as highly cultivated as Lincolnshire, take it as a whole?—I should think it is, but it would be a great deal more highly cultivated if proper security were given by the landlord to the tenant farmer.

It would be a great advantage to the landlord as well as the tenant?—Yes; and so it would be to the labourer and consumer, and every description of party.

If it would be such an advantage generally to the landlords, and the tenants, and the labourers, and every description of party, why then do not the parties enter an agreement to carry that out?—I cannot tell why. I have stated that in many instances landlords are not men of business, and take little interest in their concerns; in others, they are afraid of expending their money; afraid of making themselves liable to pay certain sums that might not be convenient to them; they might not in other instances have the means of doing it; and then, perhaps in some they might not have the disposition to do it.

And yet you think that this ought to be over-ridden by the law, to compel them to do it?—I do think so; I am against invading private rights in any way; but it is a well-known axiom, that private interest should give way to public benefit.

And because that would be, in your opinion, a public benefit, you would over-ride the rights of private property?—I should be very sorry to over-ride the rights of private property in general; but I think, where private interests and public interests are in opposition, the benefit of society should be considered in preference to that of private individuals.

The landowner now has no protection by law against food being brought from any part of the world?—No.

Therefore one great reason for dealing compulsorily with his capital is taken away, is not it?—I do not understand that to be one great reason for not dealing compulsorily with the landlord's capital.

The landlord has capital?—Yes.

As the landlord has no protection for the produce of his land now, one reason for forcing him to use his capital in a particular way is taken away?—I think one great reason is given why the tenant farmer should be able to use his energies to supply the nation with English corn, the produce of English labour, instead of having his improvements seized upon by the landlord at any moment whenever he pleases.

Would you compel landowners to grant leases as well as security for the outlay of capital?—I should think I was a very unreasonable person if I did; I should think it was an invasion of private rights.

What distinction do you draw in the two cases?—I think there is a very wide distinction.

Will you be so good as to draw that distinction?—If a gentleman is an owner of land, and he likes to use his land himself, he has a right to do it just as he pleases in every way; but if he lets his land to another individual, I think he has no right to make such conditions on that land as shall be injurious to the community of which he is a member, and to the prosperity of the country which protects him in the possession of his property. I do not think it is right and judicious that a landowner should impede the prosperity of the nation by standing in the gap, so as to hinder the improvement of the cultivation of England.

Some of the outlay that is made upon land is speculative, is not it?—Yes, no doubt.

At whose risk ought it to be made?—At the tenant's risk.

You would have to decide what is speculative, and what is certain improvement?—The arbitrator would decide that.

Then you would leave to the arbitrator not only the principle on which it is made, but the amount to be paid in compensation?—No, the bill to which I allude defined the principle on which it should be made.

The bill defines certain things to be paid for, does it not?—It does.

The bill says nothing upon points that may be uncertain as to their benefit?—My principle of remuneration would be not the extent of the outlay of the tenant, because it might be judicious or injudicious; it might be proper or improper; but the *bona fide* benefit accruing to the estate from the exertions and expenditure of the out-going tenant.

That is your opinion of what the bill would do?—What I think it should do.

You have said you have studied the bill; is that in your judgment what the bill does do?—No. That is what it would do if it were not for the clauses which render other parts of it nugatory; certain clauses, one of which I spoke of just now.

Is there any provision in the bill to secure the things being done?—To secure what things being done?

For instance, the consumption of oil-cake?—No, it is left optional to the tenant to consume the oil-cake or not.

You were asked whether the bill secures anything more than the purchase of the oil-cake?—It secures an allowance for the feeding of the oil-cake as a temporary improvement, if I understand it rightly, apart from the clause which allows the landlord and tenant to enter into an agreement to nullify the bill.

Supposing they do not nullify the bill, does the bill do more than allow for the purchase of the oil-cake?—If I understand the intention of the measure, it is to allow for the benefit accruing to the land by the feeding of the oil-cake, corn, &c,

How is it to be left to be ascertained; entirely by the valuer?—Yes.

One valuer thinking that it ought to be calculated by the cost of the cake, and the other by the benefit to the land, who is to decide between them?—There would be a case but it would not be a disputable case; you could not dispute the effect of feeding oil-cake upon land, it is so notorious; there would be no room for any dispute as to the beneficial result of feeding oil-cake.

Supposing one farmer is of opinion that a third of the feeding of the oil-cake is in the profit of fattening the beast, and another is of opinion that two-thirds are in the value of the beast, how would you manage in the case of those conflicting opinions?—The arbitrators would manage that; the parties must be brought to a decision.

You would leave the amount of the principal to be decided by the arbitrator?—Yes, and they would leave the amount to be decided by the umpire; but I think experience would teach them pretty nearly the effect of this matter. I have known instances where persons have taken in sheep to keep for nothing, provided the owner would give a certain quantity of cake to those sheep. This proves the effect of the oil-cake upon the land.

Take the case of beasts; what is the value of feeding beasts with oil-cake; how much to go to the tail, and how much to the head?—I would not give a positive opinion upon a matter of this sort; I do not estimate the value of oil-cake so highly as some people do; I should say one-fourth of the value of the oil-cake would be left on the farm.

Then that is one-fourth to the tail and three-fourths to the head?—Yes.

You know opinions differ very much as to that?—Yes.

In your judgment, that should be left wholly to the arbitrator?—I do not see how it could be left in more able hands than in the hands of the arbitrators; men of experience, judgment, and business.

Are you not met by the uncertainty which must prevail in different parts of England?—You cannot have any great measure without some inconveniences.

Are you clearly to be understood, that in your judgment any law to be made should over-ride all agreements; that no party should have the power of exempting himself from it?—I do not think that I should say quite so much as that; but I

am of opinion, that any agreements that are contrary to allowing for improvements should be operated upon by a bill of this description, if encouragement is intended to be given to agriculture, if the science of agriculture is to improve as it ought to do, and if the people are to be fed by the produce of English labour.

If encouragement is intended to be given to agriculture as a science in England, would you allow very long leases? – I want first security to be given to the occupier of the land.

Do you think the power of securing land by lease is not sufficient; and if so, why?—It is insufficient in this way, it secures the occupier for a certain number of years; it is certainly very much better than no security at all; but if agriculture is to continue to progress, so that land now worth £1 an acre is to be worth £2, something beyond a lease must be adopted, and for this reason: it is as common as possible for a man to hire a farm for 7, 14, or 21 years, and if he is a man of capital, industry, and enterprise, to drain it, to chalk it, to marl it, and manure it with guano or bones, to feed oil-cake on it, and to do everything he can to add to the power of that farm, and crop it moderately up to a certain time, when for about three years previous to the expiration of that lease, in self-defence he will (what we in Kent call) run it. He will then cease to buy guano; he will cease to make this land progress, as he has hitherto done; and so it will become less valuable every year, and by the time his lease has expired he will have taken out, as nearly as he could do, what he had put in; the consequence is, there is in such case a falling off of benefit to himself for some time, because he generally oversteps the mark, and runs too fast and takes out too much; there is a falling off of labour employed in the parish, there is a falling off of produce to the consumer, and the farm is brought from a good state into a bad one. It then comes on the market again, to be let, and it takes the in-coming tenant four years to get the farm back into the position it was in; and without he is a man of large capital and experience, it very frequently is not less than five or six years before the farm has recovered itself.

He runs the farm, and gets the farm to a low rent again at the beginning of the new lease?—That may be the object in some cases.

Have you considered the question of dilapidations?—Yes, I have.

Should you propose that they should be made a set-off against improvements?—I think that the law of dilapidations is only a just law. I know of a case now where the tenant has been obliged to pay £400; he has been imprisoned, and has been obliged to pay that money for waste, under the law of waste, or the custom of the country, for abusing a farm; and very justly so in my opinion.

In your judgment, you would have any dilapidations set off against any improvements to the tenant right?—I should say that if the farmer were guilty of waste or dilapidations, the amount of that shou'd be allowed for, and the same system that would render him liable to pay for the dilapidations should work the other way; he should be paid for all the benefit of his improvements; instead of which, I am sorry to say, the feudal law of England allows the landlord to have a claim upon the tenant for dilapidations, and does not allow the tenantry of England a claim of one farthing from the landlord: though I am a humble farmer, I say it is a reflection upon the landlords of England that such a law should exist.

Is there anything to prevent a landlord having a fee-simple interest, and a tenant, being willing to make a proper bargain, making such a bargain to secure their own rights?—They have each an opportunity of making a bargain to secure their rights; but they are not on equal terms.

If the landlord should be willing to give security, is there any reason why that should not answer the purpose?—Supposing him to be willing to do so, there is nothing else wanted; the evil is, that a great many are not willing.

Then in your judgment all persons ought to be compelled to let their land upon terms which they are not willing to let at?—It does not follow that all are unwilling to let their land properly.

Upon terms they are not willing to let their land upon?—I think they ought not to be called upon to let their land on terms which they are unwilling to let at; but I think the law of England ought to force landlords to admit of the improvement of their estates, and that they should not be allowed to stand in the way of the public interest, as they could prove no injury to their own, but benefit must ensue.

Do you think there are any tenants in the county of Kent or elsewhere who have come into the operation of farms in a good state of cultivation?—I think such cases have occurred.

And they have, of course, paid nothing for the advantages of coming into such farm?—That has not always followed, because wherever the out-goer has had a lease he has sold those benefits to the incoming tenant; and wherever the interest and the powers have been vested with the tenantry they have taken care, on a change of occupancy, to charge for those improvements.

How could they charge for them?—By deciding the benefit by arbitration; viz., by having them valued.

That is, that they have sold the lease upon terms?—By the sanction of the landlord the lease has been transferred from the one to the other, as in other cases.

A premium has been paid?—Yes, I have had one myself.

In cases where that has not taken place, do you not think that many tenants have come into farms where considerable improvements have been made by preceding tenants?—Under certain circumstances, where the tenant has been dismissed on a sudden emergency, without any lengthened notice or idea of leaving the farm, from some political or religious difference, when a man has been dismissed from a farm in a high state of cultivation, the in-coming tenant has taken it with all the outlay for nothing, except that the landlord has probably raised the rent upon it.

Without taking such cases as religious or political differences, which it is to be hoped are very rare causes of dismissing tenants, is a constant change of tenancy going on?—Yes.

And does not it frequently happen that farms are given up in a very creditable state of cultivation?—They are given up sometimes in what might be called a creditable state: but there is a vast difference between a creditable state of cultivation and the artificial state of cultivation which the progression of agriculture would render necessary, and which free trade would render absolutely necessary.

The progress of agricultural improvements has been very great, and for many years going on?—It has been going on improving, certainly, but not to near the extent that in my opinion it would do (and which I should be glad to see) if there were proper security given to the tenant farmers of England.

Then when those tenants come into possession, they get advantages without paying for them?—If they have only gained possession of the land in a natural state of cultivation, properly cleaned and so on, from judicious acts of husbandry, I do not think the tenant comes in unfairly; but if as I say, from some emergency, or from some accidental death, or from some sale of the property, or anything of that kind, the tenant has been dispossessed of the land that has been highly and are tificially farmed at a great expense for some years, then the out-going tenant has lost the benefit of his outlay to which he was entitled, and the in-coming tenant or the landlord has reaped the benefit of that outlay.

Take the case of a lease granted at a low rent, with covenants for improvement, and granted at a low rent upon the condition of the tenant outlaying money to drain it, in your opinion should the law over-ride such an agreement as that?—If the rent is made low on account of the conditions that those improvements are to be made, I do not think the law should over-ride that agreement; that would be an injustice.

That would be an exception that ought to be made, in your opinion?—Decidedly so.

Then your general answer before, that the thing should be restrospective as well as prospective, would not express your true meaning?—Not in such a case, decidedly not, as it would form an exception to the general rule.

An extreme case has been put, that the committee might clearly understand what your opinion was of the law; therefore it ought not, in your judgment, to over-ride such a case as that?—Decidedly not; it would be unjust. My view of this tenant right question is what is just, and nothing beyond that; but although difficult questions may be put, and so forth, I think experience would very soon teach mankind what was right, and what was not.

In your judgment, then, you think it is easier to make a law to settle those intricate questions, than to leave man and man

to settle between themselves?—Yes, decidedly so; in one case it would be, that great improvements would ensue, and in the other case things would remain in *statu quo*.

You have alluded to the provision that was introduced and intended to be made; and you have stated that you think it would have answered well for the purpose of manures, and by that act the value was not to be ascertained until after the tenant quitted the farm?—I am in favour of that; I think that what is necessary could be ascertained in that way; I am sure it could by an honest man, and I think one great answer to the objection that many people seem to entertain, would be, that no man can farm in the dark; his neighbours must see what is going on, whether he guanos or bones his land; or fallows it for turnips; whether he buys town manure, or merely farms within himself, and does not bring on those improvements. They can see whether he drains or chalks his land, and whether he grows half as much more as his predecessor did, and his neighbours on each side of him do.

You are not asked with reference to possible fraud committed by the out-going tenant, because that is not to be anticipated to be frequent. The question had reference to the necessity of an in-coming tenant before he came to the farm, that he might know what capital he would require to enable him to enter upon it; how could he ascertain, if the valuation was not to begin till after the tenant had quitted the farm?—To a man of business there would not be much difficulty in ascertaining that.

CHAIRMAN.] The claims are to be made before?—Yes.

Mr. HENLEY.] If the value has been put upon it, men of business know that extreme difference takes place in valuations; would not it be difficult for a person to know what he might be required to pay?—Under certain limits the question does not apply; and with reference to the bill now before the house, the outlay is limited to one year's rent; he could give a pretty good guess as to that.

CHAIRMAN.] That is only for buildings?—I beg your pardon.

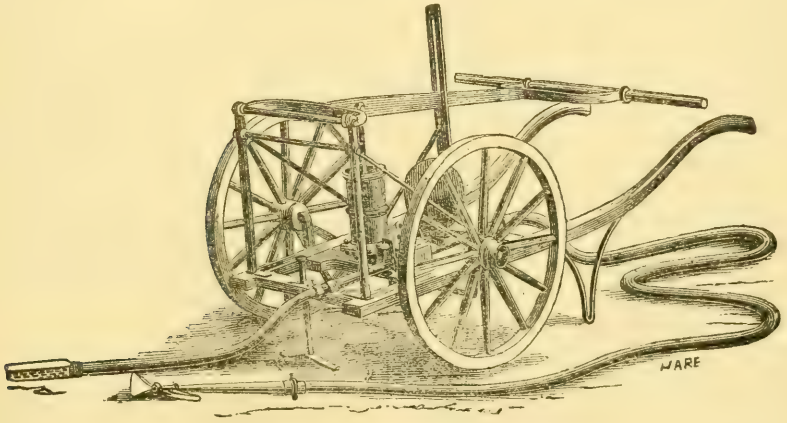
Mr. HENLEY.] You have stated that in your judgment one-fourth of the oil-cake used ought to be charged?—Yes, I think so.

Other persons might think three-fourths should be charged; therefore, if £1,000 had been expended in oil-cake, it would make a difference of between £250 and £750?—Yes; but I never heard a person in my life use the argument that is now used, and I think no farmer of judgment in England would say that three-fourths of the price of oil-cake ought to be allowed for manure.

There is a very great difference of opinion upon that point; you are aware of that?—I have not found much difference of opinion, so far as my local knowledge goes, in men of business on that point; the only difference might be, that some would say one-third, and others one-fourth.

(To be continued.)

BADDELEY'S FARMERS' FIRE ENGINE.



The near approach of winter, accompanied as it is with a remarkable increase of serious conflagrations, strongly suggests the consideration of remedial measures; and all those who have ever witnessed the consternation attending the outbreak of fire in agricultural districts, will duly appreciate every attempt to mitigate the evils of such a calamity. It continually happens, on the breaking out of a fire in a strictly agricultural district, that the inhabitants become painfully reminded of the fact, that the nearest fire-engine is some ten, fifteen, or even twenty miles distant; and even that, when obtained, too often disappoints their hopes, by proving in a miserably inefficient state. Reflecting on this, we are led to ask, to what must we attribute this state of things? Partly perhaps to supineness on the part of those, who having for many years enjoyed an immunity from the visitation of fire, have become apathetic. In a great measure, however, it may be attributed to the circumstance of fire-engines, as heretofore constructed, having been too costly in their purchase, and requiring too much care and attention to keep them in working order, to come within the means of a country village, comprising, as many of them do, less than half a dozen homesteads.

The frequent occurrence of agricultural fires induced Mr. W. Baddeley, C.E., to devote much at-

tention to the subject, and ultimately led him to devise a *farmer's fire-engine* of a decidedly agricultural character, in every way adapted to its intended purpose, and which promises adequately to supply a long-felt desideratum. The "*farmer's fire-engine*" was first publicly exhibited at the meeting of the Royal Agricultural Society at Northampton, in July, 1847, where it was much admired;* combining, as it does, on a complete travelling carriage, in the smallest possible compass, and at the lowest possible cost, all the usual capabilities of a larger and more expensive engine.

The prefixed engraving exhibits the "farmer's fire-engine" in its working condition. It consists of a strong gun-metal forcing-pump, and spherical copper air-vessel, mounted upon a light two-wheeled framed carriage, easily managed by one man. It is furnished with metallic valves, arranged in a separate valve-box clear of the working parts, and covered by a plate, which is secured by a single screw. On loosening this screw, the covering plate can be taken off, the valves examined and cleared of any obstruction, and the cover replaced again, in one minute, without interfering with or disturbing any other part of the engine. The valves are of gun-metal, with perpendicular facings, without leather or packing of any kind. A flexible suction pipe of vulcanised India-rubber, equipped with a copper strainer, is attached by a gun-metal union screw to the end of the engine, the opposite end being equipped with a length of Vaucher's patent canvass delivery hose, which requires no oiling or care beyond drying after use. Upon the end of the delivery-hose is screwed a copper branch-pipe, with gun-metal screws and nozzle, on the latter of which is swivelled a fan for spreading the jet of water, and distributing it simultaneously over a large extent of surface. This is accomplished by bringing the plain surface of the fan over the jet angle-wise, by pressing the thumb upon a lever; at other times the fan is kept back out of action by means of a spring. An effect is thus produced superior to that from a perforated rose, while, from the jet not being acted upon until after it has quitted the nozzle, choking is impossible. This spreader has the advantage of being thrown into or out of action instantaneously, without stopping the engine, which must be done if a perforated rose, scoop, or slit spreader is employed. In case of fire in corn or hay-stacks, or large surfaces of weather-boarding and such-like, this spreader is invaluable, as it enables a large burning surface to be extinguished in a very short space of time, with the smallest quantity of water. To work the engine fully requires three men at the handle; and they will, under favourable circumstances (absence of wind, &c.), deliver a jet of water three-eighths of an inch in diameter, from fifty to sixty feet high; or they may throw a larger jet to a less height.

When in travelling order, the suction-pipe and delivery-hose are both permanently attached to the engine; and on reaching a fire, all that has to be done is to *unbuckle a single strap*, throw the suction-pipe into the supply of water, and commence working.

Although this engine is but of moderate power, yet, from the rapidity with which it can be brought up, and set to work in the infancy of a conflagration, it will be found far more efficient in arresting the progress of fire than any more powerful agent applied at an advanced stage of the conflagration.

Now that farmers are sensible of the vast importance of judicious draining and irrigating, as well as the advantages of manures applied in the liquid state, a "universal force-pump" of this kind will be found an invaluable addition to the ordinary implements of a farm; and, in conjunction with that of which no farm should be destitute—a good pond of water adjoining the homestead and stack-yard—such an engine as the present would avert all the worst features of incendiarism.

To country gentlemen, whose establishments do not require or warrant the maintenance of a more powerful fire-engine, the present machine offers much security and convenience, as well for extinguishing fire as for watering lawns and gardens, filling cisterns, &c. To small country parishes and villages, usually destitute of fire-engines, the present, at an easy cost, offers adequately to supply the deficiency.

* Described in the society's catalogue as "A Farmer's Fire-engine, Drainer, and Irrigator, invented by W. Baddeley, of 29, Alfred-street, Islington, and manufactured by M. Merryweather, of 63, Long Acre, London.

THE "IMPERIAL BUSHEL."—A circumstance of considerable importance to the farming community has transpired during the last few days, in certain proceedings that have taken place at a meeting of agriculturists at Liskeard, in Cornwall, the purport of which was to discuss the propriety of henceforth selling corn *by measure* instead of *by weight*, the system at present in that part of the kingdom being to sell 62½lbs. as a bushel of wheat. It seems that there is considerable variation in that and the neighbouring localities, in the standards of weight by which corn is sold; for example, in the western part of Cornwall, 9 scores and 6 lbs., or 186 lbs., represent a Cornish bushel, equivalent to 3 imperial bushels; at Tavistock, 7 scores, or 140 lbs., are considered the representative of 2 imperial bushels; while at Plymouth, only 6 scores 5 lbs., or 125 lbs., imply the same imperial quantity. Now, it is well known that the wheat crop of the late harvest has varied considerably in different districts, not only in quality, but in quantity; and while in some localities the average weight has been 61 lbs., in others—Cornwall, for instance—it will scarcely

come up to 56lbs. the imperial bushel. The grievance complained of by the Cornish growers is, that if they continue to sell 62½lbs. to the bushel, and it be returned as the imperial bushel, by which the averages are calculated for regulating their tithe payments, they will have to add the quantity necessary to produce the accustomed weight of 62½lbs. The mode suggested at the above meeting, and generally assented to, was that in future nothing should be added to the bushel for the purpose of making it weight, but that the legal bushel should be sold for what it was worth, care being taken that the returns were correctly made; and that, as a matter of fairness to the purchaser, the weight of what he bought should be stated and guaranteed, thereby obviating the objection sometimes made by millers that the bulk, in point of dryness, was never equal to the sample. Another view of the subject was elicited—and an important one as regards the pecuniary interest of the farmer—namely, the influence of the averages (constituted after the existing mode) upon the annual tithe payments. It is very well known that a very short interval elapses, after the getting in of the harvest, ere the grower finds it necessary, in order to meet his current and other exigent expenses, to thrash out and send to market much of his newly-stored produce; the consequence is, that having but little to send in the spring of the year, when corn is fetching a better price, he is eventually compelled to pay tithes based upon currencies which his circumstances precluded him from realizing. The result of the deliberation of the meeting in question was the adoption of two resolutions in accordance with the general feeling among the farmers in the western part of Cornwall, and with the conviction that the propositions are not such as to require any alteration of the existing law, the spirit and intention of which will, it is contended, be equally maintained. The resolutions were—1st. That the present custom of selling corn by weight, as established in this neighbourhood, exercises an injurious effect on the agricultural interest, by unjustly raising the averages of the corn returns. 2nd. That this meeting, as a body of agriculturists, pledges itself to abandon the present system of selling 62½ lbs. as a bushel of wheat; and also pledges itself in future to sell *all grain* by the imperial measure alone; stating, if required, the actual weight thereof.

YORK FARMERS' CLUB.

THE ANNIVERSARY.

The second anniversary of this useful and well conducted institution was celebrated on Thursday, Nov. 2, in a manner which fully sustained its hitherto truly practical character. At an early hour, after noon, a good many of the members of the club assembled at the Star Inn, in Stonegate, to hear a lecture on drainage and its influences, which J. H. Charnock, Esq., author of the Royal Agricultural Society's prize essay on the agriculture of the West Riding of Yorkshire, had liberally undertaken to deliver on this occasion: they afterwards dined together. As we give the lecture pretty fully, we must refrain from introductory matter further than to say that M. M. Millburn, Esq., of Thorpfield, Thirsk, Secretary to the Yorkshire Agricultural Society, was appointed Chairman, and with very few prefatory remarks, called upon Mr. Charnock to commence the treatment of his subject.

DRAINAGE AND ITS INFLUENCES.

Mr. Charnock proceeded. He said,—In whatever light we regard the art of drainage, whether simply as an agricultural operation for the improvement and better cultivation of the land, or, taking a wider range, as patriots and philanthropists, we contemplate its influences upon the social and physical condition of our increasing millions, every practical and reflecting man must feel assured of the manifold and important results for good which its more general adoption and effective execution will certainly realize. In submitting the subject, therefore, to your consideration, I propose to treat it under each of these heads, in the hope that by so doing I may not only conduce directly to your interest as agriculturists, but relatively to the well-being of the community. First, then, with respect to drainage as an agricultural operation. It is somewhat singular, and would require more time than we can at present devote to it to assign the causes for such an anomaly, that whilst almost every branch of manufactures in this country has, during the piping times of peace, made such progress in excellency of workmanship, beauty of design, and facility of production, as by some to be esteemed as the consummation of perfection in all these particulars, the science of agriculture is, as it were, but just beginning to dawn. It is quite true, that for many years past there has been a gradual improvement in cultivation in certain districts, and under certain favourable circumstances; and it is equally true, that during the last 20 years much waste low land has been effectively reclaimed and cultivated. But these are but the exceptions which attest, with strong contrast, the general fact—the bright lights of the landscape, which serve only to show the blankness of the back-ground, unillumed by similar rays. How many thousands and thousands of acres do we see, even in our own immediate locality, which, if properly drained at a cost of about £4 per statute acre, would yield on an average full 10 bushels of wheat per acre more than in their present state? And yet not one field in a hundred out of these thousands of acres is being done! I have often thought that, had my means been equal to the will, that, to hold out an additional inducement (could any be needed) for drainage being more generally adopted, I would undertake it at my own cost, and do it effectively and permanently too, on being paid the extra produce per acre of the two succeeding crops after the work was done, and when those crops came to maturity. There would, I am aware, be some difficulties in such an arrangement, and some little trouble possibly; but, you will comprehend from it, that I conceive I should make a very good bargain by such a mode of reimbursement. "Well, then," says the owner, "if this be so, why does not my tenant make an agreement with you, or himself do the work, seeing how soon it will pay for the outlay?" "Yes, sir," rejoins the occupier,

"that may be all very true; but you must not, on your part, forget that if I drain this land in the permanent and effective manner you would desire to see, I am departing from the ordinary routine of my cultivation, by making, for a time, a considerable additional outlay, which my capital will not admit of without a disarrangement of my customary proceedings; and, besides, I shall be improving in permanent value the fee simple of your property, which is not my province, any more than as a tenant of a house I am obliged to make additions to it, whereby its value and comfort are enhanced to my successor." Such is the position of the two parties—a mine of wealth between them for the digging, and yet neither attempting to realize it! Is there no remedy for such a state of things? No mode of compromising the matter, and dividing the spoil? Is there no such thing as the owner opening the mine, and the tenant working it on the payment of a per centage on its cost of opening, as additional rent? Or is there, in case of necessity, no middle man, with suitable skill and means, to say to the owner—"If you will permit me, sir, to exercise my experience and ability in the systematic drainage of your property, I will undertake to execute the entire work in a complete manner, and you shall reimburse me by a charge of 6½ per cent. on the outlay for 25 years." "With all my heart, Mr. Drainer, if you can ensure me that the land will be worth so much more to my tenant, and that he, in fact, will undertake to pay that additional rent." Now, were I the occupier of such land, I would most readily pay 10 per cent. to have it well done—it is but 10s. per acre more—assuming a cost of £5—and what is that if I can realize eight or ten bushels per acre additional produce—and that, too, without taking into the calculation the amount of saving in horse-flesh, &c.? Why, the very gripping per acre for the wheat crop in the undrained state would almost cover the charge! But at this day, and to such an assembly as the present, I need not, I am sure, dwell at further length upon this portion of the subject. The wide difference in profit and comfort between cultivating a drained farm, and wading for eight months, and breaking your shins over the baked clots and gaping crevices of the other four months of the year upon an undrained farm, has become so sensibly manifest, that few farmers of this day will, I apprehend, continue the "water system," if once they can see their way to dry ground again. In speaking of the practical operation of drainage, I feel it would be unnecessary to enter into the detail of those rudimental principles and practices which are now so much more generally understood than formerly. We need not, for instance, stop to show the utter worthlessness of the eighteen and twenty inches deep work, one-half of which is rendered worse than useless, by the treading of the horses in the first ploughing after it is done; nor need we, perhaps, expatiate at any great length upon the superiority of the machine-made pipes over the horse-shoe hand-made tiles of a few years back. As respects these a little incident occurred to me since I came into this neighbourhood, which may serve to recal to your minds, as it did to mine, the improvements which a comparatively few years have witnessed—not, I trust, with any desire to remain stationary; but, rather, looking back on what has been effected, as a stimulus to further progress. We see what has been accomplished notwithstanding the drones of that day; and we know what yet remains to be done, in spite of the "contented" of this. The incident alluded to was simply this—I was walking with a friend down one of our country green lanes, when his attention was arrested by a piece of a broken draining tile, which showed a section of an internal foot, and was of a smooth and compact texture—in fact it was a machine-made tile, but being, in his ignorance of the matter, looked upon by him as a beautiful specimen of workmanship, compared with what he was in the habit of seeing, he took it up, and asked me how it could possibly have got there. Yes, was my reply, you may ask me the question, and I could give you the history of that piece of tile, for I could swear, if called upon, from its shape, whence the die came through which it was moulded, but it would be spinning too lengthy a yarn; suffice it that four years ago you could not have found such a piece throughout the whole of the North of England, had you given £1,000 for it; and I then briefly explained to him the progress which in that period had been made in the manufacture of tiles and pipes, with which, having a mind for advancement, he was much interested. In further illustration of this progress I will just add, what I have already stated in the West Riding Report, that to my knowledge one engineering firm alone, in the West Riding (Messrs. Bradley and Co., of Wakefield), during the past three years have made and sold something like 140 tile and pipe machines, about a third of which are at present working in this county. It is not for me to say whence this improvement came. Notwithstanding all the progress, however, which certainly has been made, how frequently do we see work being executed without any regard to system, and at a cost which, skilfully applied, would realize the desired object, but which, as it is, much exceed the limit for which really effective and permanent work can be completed, whilst in both these essentials it promises disappointment! I have on several occasions endeavoured to show in what really effective drainage consists; and with this view have pointed out the standard of suitable dryness with which nature has supplied us, for our imitation, in those fine turnip and barley soils which are the envy of clay land occupiers. It is essential to all perfection, that the operator possess a clear and definite knowledge of the object he aims at attaining and it will be self-evident that, in such an operation as drainage, the more closely we can arrive by artificial means to that mechanical condition of the soil which nature has shown to be the best, the more certainly shall we attain that effectiveness which should be our object. Some difference of opinion seems to exist as to the interval which should elapse after rain before the drains produce this suitable dryness. Some contend that if land is workable in forty-eight hours after a soaking rain, that is sufficient; but I maintain this is not effective drainage—and particularly for arable land; and I do so because, as I have said, nature shows us that a twelve hours' interval is nearer what it should

be. I never yet heard any one complain that his land had been rendered too dry by artificial drainage, but I have repeatedly heard the converse—that it was not yet dry enough. What poor economy is it then, for a temporary saving of a few shillings per acre, to hazard that completeness which we know is attainable! That it is a great improvement on its natural condition to secure the working of strong land in forty-eight hours after rain, no one will question; but it is only the comparative degree of effect, and not that perfect measure which may be secured. In grass land more license may certainly be taken without inconvenience, and especially if, from situation and other circumstances, there is a tolerable certainty of its not being ploughed out: in ordinary cases, however, I believe perfect filtration is desirable, and particularly in the tenacious clay subsoils. It conduces to the earlier growth of a more sweet and nutritious herbage. It has been so much the fashion to extol what has been termed deep drainage, and there has been, too, so much misconception and misapplication in consequence, that I should hardly meet your expectations without some notice of it. The fact that one extreme generally produces another has, I believe, been the origin of what has been absurdly enough deemed the new system of deep drainage, when in truth there is nothing new about it but the supposition of its being a general panacea for all the ills that wet land is heir to. No one who thoroughly understands the matter will for a moment question the suitableness and efficiency of deep and distant drains in the more porous substrata, however much they may be satisfied of the impracticability of their producing equally satisfactory results in the more retentive subsoils. Practically the question at issue (if it can still be said to be so) is—will drains four feet deep and from thirty to forty feet apart in strong clay lands produce an equal effect with drains three feet deep and from eighteen to twenty-four feet asunder? or, in other words, will extra depth in these subsoils compensate for an additional distance between the drains? My experience in the drainage of clay lands daily convinces me that there is nothing to gain in point of cost, and much to lose in effectiveness, by having the drains unnecessarily deep and too far apart. I have found on such lands that three feet (which is quite sufficient to secure permanency), and from eighteen to twenty-four and up to thirty feet apart, according to the character of the subsoil you have to deal with, is the most suitable in all respects, and produces the most satisfactory results. You must not, however, suppose that I would disparage deep drainage under suitable circumstances: it is the inappropriate application of it which is to be guarded against—its abuse and not its use. The truth is, that no general rule can be laid down: the real art of drainage consists in adapting the mode of operation to the circumstances of each particular case, so as to produce complete and permanent effect at the least cost; and this is the province of the experienced drainage engineer to determine, and upon the performance of which in the most skilful manner depends the value of his services. In the drainage of estates of any extent, and in that of many smaller properties as well, it has frequently appeared to me that much of the good that might be realised has been lost sight of in consequence of there being no systematic plan formed for the work. A field here, and another there, is done as the tenants may ask for it, or the fancy of the owner or his steward dictate; whilst with a preconceived and well-laid-out plan of operations, a competent person would not only execute the work at less cost, but would, at the same time, and with a view to its entirety, often be able to make the drainage water subservient for the purposes of power, irrigation, and ornament. Mr. Charnock here referred to the different kinds of pipes, the old and present plan of setting out drains, the subsoil prober, and explained also the construction of the new kilns which he exhibited at the Scarboro' meeting of the Yorkshire Agricultural Society; and which he stated, as a general result, would make a given number of tiles in half the time occupied by the ordinary method of burning—that is, in the mass. He proceeded: Having now laid before you some of the principal points affecting the more general extension and effective execution of drainage as an agricultural operation of primary import both to owners and occupiers, I would beg your indulgence for a few minutes (before proceeding with the remaining portion of our subject) to urge upon you, for your own welfare, the absolute necessity which exists for individual exertion and co-operation in so essential a matter. And I say individual exertion and co-operation, because the legislature has not only recognized such co-operation as the most effectual means of securing the object, but has granted those necessary powers and facilities, the want of which has hitherto exercised such a baneful influence upon cultivation. The lecturer went on to allude to the effort made to establish a land-draining company in this county in 1842 or 1843, the subsequent organization of such a company in the West of England, and concluded the first section of his lecture by calling upon the farmers of the agricultural community to form a similar company for the North of England, basing his exhortation upon the facilities which the act of incorporation obtained by the West of England Company affords. He proceeded to say: It now remains to consider the concluding portion of our subject; viz., the influence which drainage will exercise over the well-being of the population; and you will not fail to comprehend that by the term drainage, for this purpose, we must include not only the effective drainage of our fields, but the not less effective sewerage of our towns and villages; and when we reflect upon the consequences of delaying or neglecting these matters, with the more than threatened visitation of one of the most fatal of those periodical scourges with which it is the will of an all-wise Providence to arouse our energies for the future, and punish our omissions for the past, every man who possesses, in any way, the means or the ability to co-operate in the furtherance of so simple yet efficacious a remedy, must, I am sure, be persuaded of the necessity there may be for his personal efforts. A preventive is proverbially better than a cure; let us, therefore, hasten to apply the one, now that we have every possible facility for doing so placed within our

reach, lest we have to lament the impossibility of the other. That drainage exercises a marked influence over meteorological effects cannot be doubted: take, as an instance, the almost complete expulsion of ague from those fen districts which have been operated upon so effectively. How constantly, too, may we observe the strong line of demarcation in the mass of dew floating at sun-set over the lower grounds, wherever, as is often the case, a dry gravelly soil adjoins. The fact is, the dew in reality falls (or rises, as some suppose) upon both lands equally as the sun declines; but the low marshy land, being already full to repletion, can imbibe no more, whilst the dry land, being always in a healthy mechanical condition for the reception of moisture, drinks it in as fast as it falls; hence over the one it is visible, and over the other not. Our ancient friends, the Romans, seem to have understood something of this matter, if we may judge from that passage in the 1st Geor. of Vigil, 113th line, in which he says,—"And then it is a good thing to drain off the collected moisture from the soaked land, especially when a stream has overflowed its banks in the unsettled season of the year, and covered the land with a deposit of mud, causing the cavities to reek with moisture." And shall we, of the 19th century, with all our mechanical skill and appliances, fail to carry into practical execution, in all its details, the knowledge we possess? The late Dr. Dalton, one of the highest meteorological authorities we ever had, says,—"There exists at all times, and in all places, a quantity of aqueous vapour in the atmosphere, variable according to circumstances: and that whatever quantity may exist at any time, a certain temperature may be found, below which a portion of that vapour would unavoidably fall, or be deposited in the form of rain or dew; but above which no such diminution could take place—chemical agency apart." Hence dry and effectively drained land, being, as I have already said, in a state to adapt its temperature to that of the atmosphere—to be highest during the sun's heat, and to decline, with it, to the cooler degrees of evening; the fall of dew is more regularly promoted upon it, and as gratefully received. But not so in the wet and undrained soils. Referring the meeting to a table of some meteorological experiments, the results from which presented some curious facts for consideration, Mr. Charnock said: You will observe how much greater the evaporation is from water than from land, and in fact that the column showing the amount evaporated from the soil when saturated with water, so as to represent undrained land, differs but little from that of water itself when exposed to both sun and wind; hence it follows that the wetter the land the greater the amount of evaporation, and consequent excess of coldness. It is curious, too, to notice how much less the evaporation is in the shade; from which it follows that undrained land is really the warmest when there is the least sun; and which, to my mind, accounts for what farmers call a "groshy" growth of young wheats during mild winters; and which invariably weakens the plants, and produces very prejudicial effects on its subsequent growth and maturity. And, I believe, making suitable allowances for the difference in the physical construction of the two, the same causes operate in all probability with equally injurious influences on animal life. There are many familiar facts which attest this noticeable in the habits and economy of our wild animals. Every shooter, for example, knows that he will always find the partridges the strongest, and the coveys the largest, on the naturally dry soils—the turnip and barley lands. We know, too, that what is termed the rot in sheep is completely removed by draining land previously certain to infect. If, therefore, the lower animals are so prejudicially affected, in various ways, by an excess of stagnant moisture, how much more certainly and severely must its influences be felt by the human animal, who from circumstances, in a civilized country, is necessarily so much more dependent on artificial means for health and comfort. And in so variable a climate as our own, too, precautions and ordinary conveniences for warmth and dryness are the more indispensable. There is one other influence which possibly drainage would in some measure produce, and which I have more than once heard offered as a reason, if not for its suspension, at least for its very gradual progression; and this is a reduction in the value of agricultural produce. Had agricultural improvement, and a consequent increase of produce, kept pace with the increase of our population, there would have been some ground for such an apprehension; but the fact is, we are at this day living in constant fear of bad harvests, lest we should have short supplies; and we have daily experience of the effect which a rumour of a few rotten potatoes produces throughout the breadth and length of the land. The population, for instance, of the West Riding, has more than doubled since the present century came in: in what proportion has the production of food increased in the same period? Certainly not in anything like the same ratio. What, therefore, is there to be apprehended under such circumstances? Assuredly nothing, with an adequate improvement in cultivation. Who would not infinitely prefer 40 bushels of wheat per acre, at 5s. per bushel, with a cost of production of £6 per acre, than 20 bushels at 8s., and a cost of £7 or more, and no certainty of a crop into the bargain. I repeat, therefore, what I am sure all you gentlemen will concur in, that no well-founded apprehensions need exist on this account; nay, on the contrary, I am one of those who consider that both corn and meat are much too dear for the general weal of the community of a country like our own. Somewhat lower rates and greater abundance would not only add directly to the comfort of our poorer brethren, but indirectly also through the medium of our higher and middle classes, whose domestic and other dependents would be increased with increased means. Consider, too, the amount of profitable employment to the able-bodied and industrious, which a course of drainage and sewerage operations in every parish in the kingdom would for some years secure, and which is daily becoming the more urgent, as we know other employment is necessarily being diminished. Depend upon it, there is no surer way of making and permanently securing a loyal subject, a good citizen, an honest man, and I had almost said a true Christian, than giving to the poor man a dry and comfortable home, with full employment, and a full stomach of good food; and to his richer neighbour the means, opportunity, and encouragement to provide him therewith.

Mr. CHARNOCK'S address appeared to excite much interest and to give great satisfaction, for he resumed his seat

amidst applause. We may mention that the lecture was well illustrated by specimens of piping, sections of drains, results of meteorological experiments in tabular form, a plan of the new tile-kiln, &c.

The CHAIRMAN, after a few complimentary remarks with reference to the interesting and instructive character of Mr. Charnock's lecture, invited a discussion.

Mr. WALES, of Husthwaite, asked Mr. Charnock's opinion upon the different-sized tiles. He wished to know more particularly if he considered the smaller ones effective and safe?

Mr. CHARNOCK thought that there are risks to be run in using the smaller tiles which do not attach to the larger ones, and that in such matters a person ought to endeavour to be on the safe side. It was true that by using the smaller tiles a saving of about 5s. per statute acre might be effected; but he recommended that provision should be made for the kitten to go through the hole made for the cat, rather than that a risk should be run by making a hole only for the kitten; or, in other words, only providing for ordinary falls of rain. With regard to the form of tile, he considered the oval tile decidedly the most perfect.

Mr. WALES then entered into the details of a draining exploit in which he had himself been engaged, showing the necessity of going to the root of the evil to be contended with at once, and the great improvement which the particular land in question had manifested since its drainage had been effected, despite the jeers with which, in the course of the operations, he had been assailed. In this case he found that the evil was all in the hill above, and, as a man bothered with rain or damp in his house goes to the top to discover the source of the annoyance, so he applied drainage to this hill, and from that day to this he had heard no more of the "deaf land," which he was told he would make by draining what was before little better than a bog. He had now some beautiful short-horned bullocks and heifers grazing on that land, and the herbage, which was at one time extremely broad and coarse, was now becoming, by degrees, finer and finer. With regard to contracting for the work, he thought it was impossible to lay down any fixed rules, because the strata varies so much, that whereas you may contract to go three or four feet deep, when you get on a little way it may turn out that you must go six feet deep.

Mr. DIXON, of Darlington, offered a few remarks with respect to the shape of the tiles, showing that the oval ones have a considerable advantage over the round ones, because the latter, in case they are not laid down exactly true, are more liable than the others to undulate so much as to affect the efficiency of the drainage. The oval tiles have more depth, and they therefore cannot get one below the level of the other if they are put down with anything like mathematical accuracy.

The CHAIRMAN gave some interesting and useful details on the subject of draining in porous subsoils, showing that when that is the character of the subsoil, farmers should drain as deep as possible. Nothing, he said, requires the pains, and skill, and untiring attention of parties engaged in the operation of draining, more than soils of that description, and he gave an instance in which the difficulties that have to be contended with, with respect to running sands, had been overcome. The plan adopted was simply that of carrying up two or if necessary three drains at one and the same time, instead of not commencing the second until the first line of drainage was completed. The effect is that the spring is more speedily overcome, and the persons engaged in the work are the better able to accomplish their task.

The hour fixed for dinner having now arrived, the discussion dropped, and the company adjourned for a short time to an adjoining room.

THE DINNER.

Shortly after the lecture, the members and friends of the club dined together at the Star Inn, and there was a more numerous attendance than on a similar occasion last year. Among the company present were Mr. Charnock, Mr. Milburn, Mr. C. J. Hanson, Mr. Hawking, of Linton-upon-Ouse, Mr. Ware, of Skirpenbeck, Mr. Wales, of Husthwaite, Mr. Smallwood, of Middlethorpe, Mr. White, the secretary, Mr. Dixon, the secretary of the Darlington Farmers' Club, and Mr. Kagenbusch, chemical manure manufacturer. Mr. Milburn occupied the chair, and Mr. C. J. Anson, the vice-chair.

After dinner the usual loyal toasts were drunk, and also the health of the Archbishop of York and the clergy of his diocese.

The VICE-CHAIRMAN, in proposing the health of Mr. Milburn, alluded to the numerous treatises which he had written, and which he hoped would be for the benefit not only of the agriculturists but of the community at large. Long might he live to be the means of improving the science of agriculture both in his own neighbourhood and throughout the kingdom. (Applause.)

The CHAIRMAN said for the very kind manner in which his health had been proposed and drunk on that occasion, he begged to return his best thanks. If he had at all been of service to his brother farmers, it was to him a source of great satisfaction. Of some it might be said that they kept their discoveries to themselves; but no sooner does a farmer find he reaps advantage from using a particular kind of manure, or adopting any other plan whereby the productiveness of his crops is increased, than he communicates his knowledge east and west, north and south. There were, however, some modes of communicating knowledge which they could not readily adopt. They had not all of them been foremost with the pen, and they did not all of them use the press, and it frequently happens that those who are the best qualified to write from their practical knowledge are those who are the most backward in communicating that knowledge either by the pen or through the medium of the press. (Applause.) To remedy disadvantages of this kind, he conceived that farmers' clubs were of the greatest possible utility. It is one thing for a farmer to write down what occurs in the course of his practice, and another to communicate to his friends and neighbours in a free and easy manner, at the meetings of these clubs, what he knows respecting the operations of farming. The advantages connected with these clubs in communicating ideas, and in disseminating them far and wide, had been very great; and nothing had he urged more strongly than that the secretaries of farmers' clubs should take the proper means of having recorded the sentiments that are expressed at their meetings, and that there should be some mode of extending the knowledge so acquired through the length and breadth of the country (applause). Happening to have the honour of being connected in some manner with the agricultural periodical literature of our day, he could only say that it would afford him the greatest pleasure to give, as far as he was able, the practical experience he was possessed of to the individuals composing the excellent farmers' club of York (applause). He invited those persons to forward to him their mode of practice; and speaking of the agriculture of this county, he observed there might be districts a little in advance of it. Taking, however, the difficulties connected with the climate, the necessity for draining the land, and other circumstances into account, he did not think there was a county which had during the last 50 years made greater advances (Hear, hear). He would say to the farmers of Lincolnshire, of Northumberland, and of the Lothians, they would find that on

the Wolds of Yorkshire as great advances had been made as in the better-favoured districts of the country. Then, when they looked at Yorkshire as the classic ground of the short-horns, it must be admitted that they stood foremost, and no doubt would continue so to do, in the breed of those animals which would commend themselves to any man who had the feelings of an Englishman, and who loves the roast beef of old England. The farmers' clubs, he hoped, would continue to be useful, and go on increasing in prosperity. He rejoiced to have the opportunity on this occasion of mixing with the members of this institution, and he was quite certain that no club of this kind, or any institution whatever, can flourish without an active, efficient, and judicious secretary (Hear, hear). He complimented Mr. White, the secretary, on the zeal and energy he had displayed, and the chemical knowledge he had brought to bear on all questions discussed by the club, and concluded by proposing his health (applause).

Mr. White, who was so deeply affected as to be unable for some time to give utterance to his sentiments, said it was with mingled feelings that he rose to return thanks for the kind compliment which had been paid him, because in the course of a few weeks his connection with this club must terminate, inasmuch as he was about to leave York, for ever, for another sphere, which, he hoped, would prove advantageous both to himself and family. Owing to circumstances which had placed him so much in connection with agriculture, a new source of livelihood appeared to open before him. He was about to devote the whole of his time to that which he had for years devoted considerable attention; but to do so, it seemed necessary that he should take up his residence in the metropolis. To say that he was about to leave York, for ever, was a strong expression, and the thoughts that crowded round it had overpowered him, because York was the place of his birth; he had passed some of the happiest moments of his life in it; and here it was that those associations had been formed which had rendered the city endeared to him. He should, however, make periodical visits to York, and he trusted so to arrange those visits as to be occasionally present during the meetings of the members of this club (applause). He alluded to the kindness evinced towards him, and expressed the hope that the club would prosper more than it ever yet had done, and that when he appeared before them in future, he should meet with such a reception as he had hitherto invariably done (applause). He proposed "Success to the York Farmers' Club" (cheers).

The Chairman said they had that day heard a very excellent lecture from Mr. Charnock, to whom, he believed, a great deal of credit was due for the improvements which are now taking place in agriculture. He noticed the valuable suggestions Mr. Charnock had made from time to time, and thought they ought to be very much obliged to him for the information he had imparted on this occasion. The subject was one of the deepest importance to the agriculturists; for without draining, and without the land is entirely dry, they could not succeed in farming. But after they had drained their land, there would be a little more call on their pockets. They would have to keep more stock, and more manure. In order to get good green crops they must apply artificial manure, and he would recommend to the attention of the members what he thought the best mode of improving their poor lands, and that was the cooking of linseed. He would not stop to inquire which was the best mode of preparing the linseed, whether the cold or steam boiling mode; but if they adopted a system of feeding on linseed compound, they would not only be able to bring large quantities of stock to the market, but to get the land into a state of fertility which, next after draining, is most important. He proposed the health of Mr. Charnock, and thanks to him for the paper he had read (loud applause.)

Mr. Charnock, in returning thanks, said he should be happy, either by reading an occasional paper or any other means within his reach, to give the members of this institution all the assistance in his power. Along with his friend Mr. Milburn, he regarded these clubs as more likely to do real essential service for the science of agriculture than any other institution, not excepting the larger agricultural societies. They bring together men practically and theoretically acquainted with the subjects on which they treat; the one corrects the other, and thus essential service is rendered in these matters (applause.)

Mr. Milburn being obliged to vacate the chair, it was taken by Mr. Hawkins, who proposed the health of Lord Feversham, and the other donors of the club (cheers).

Mr. White, on behalf of the donors, acknowledged the compliment, and read notes from several of them who were unable to attend the meeting. Presents of game and fruit for the dinner from the Earl of Carlisle, J. G. Smyth, Esq., M.P., &c., were acknowledged. The reading of one of the notes gave rise to a good deal of laughter; not unmixed, however, with expressions of disapprobation of the shabby and ridiculous nature of its contents. This remarkable production, which came from the pen of one of our representatives (the newly "chosen one"), was meant to excuse a present from Nun-Appleton, in the shape of game or fruit for the dinner, stating to the effect that the fruit season was over! and that the wet weather had destroyed all the game!! Our readers, quite competent judges, must draw their own conclusions. We may mention, however, that the feeling which the reading of this note produced, in contradistinction to that evinced when the letter of our respected member, J. G. Smyth, Esq., was read, induced one of the company to refer to a matter of somewhat older date, as bearing upon the topic which then engaged attention; and his remarks went to show that wariness in parting with more than one can help, is, in the case in point, a family complaint. This pretty little interlude being over,

The Vice-Chairman, in very eulogistic terms, proposed "The Health of the Earl of Carlisle," a nobleman who had endeared himself to all classes of the community by his urbanity and general desire to promote the welfare of the country (applause).

The Chairman proposed "The Vice-Chairman" (applause).

The Vice-Chairman, in responding, expressed the pleasure he felt in being present on this occasion, and said that pleasure arose from the fact that he was early in life connected with agriculture, and also because he viewed the agriculturists as one of the most important parts of the community. He concluded by proposing "The Committee of the York Farmers' Club, and Mr. Graves" (applause).

Mr. Graves responded.

The Chairman next gave "The Skirpenbeck, Scrayingham, and Sand Hutton Agricultural Society; and Mr. Ware, the Secretary" (applause).

Mr. Ware acknowledged the compliment, and wished that equal zeal and activity were imparted into the York Farmers' Club, that was manifested in carrying on the society in connexion with which his name had been mentioned. He thought that when gentlemen undertook offices, they ought to fulfil them.

The Chairman said the meeting ought to drink the next toast most heartily. It was "The Royal Agricultural Society of England" (applause).

Mr. White, as a member of that society, acknowledged the

toast. He observed that the farmer of the present day ought not to content himself with jogging on at the pace of his predecessors. He must emulate the conduct of the tradesman, and apply himself not only to the practical part of agriculture, but likewise the scientific, for by the application of science agriculture would become what it ought to be—a profession. At the present time he knew of no subject more important to agriculture than the preservation of fœcal matter; and he was glad that gentlemen of his own profession were becoming alive to this subject. His friend, Mr. Spence, had observed to him a few days ago that he was sure a fundamental error had been committed by allowing the waste of this matter, and that its collection was the only plan for the salvation of the country. It was the province of such societies as these to enlighten the agricultural mind on these topics, and he (Mr. White) ventured to aver that when proper attention is paid to them, this country will be rendered one of the richest and most fertile in the world. Mr. White concluded by proposing the health of Mr. Dixon, secretary of the Darlington Farmers' Club (applause).

Mr. Dixon in responding, said he felt the liveliest interest in agriculture, and had done something towards promoting it; but he did not know he deserved all the flattering encomiums which had been heaped upon him. He might observe that, although he was not a public speaker, there was nothing afforded him greater pleasure than to take a part in meetings like the present. He thought there were none but would be highly delighted with Mr. Charnock's lecture. The advantages of draining were incalculable; and although fifteen or eighteen years had elapsed since drainage had been commenced with some degree of earnestness in this country, he was sure the meeting would agree with him that much was required to be learnt, much to be done; and they were warranted in believing that further improvements would secure still greater benefits. He would add, however, that drainage was but the foundation of good farming. The superstructure which needed raising upon it consisted in putting the land so drained into a good condition, by skilfully procuring the soil for the growth of the various productions cultivated by the farmer. The two combined would be the perfection of husbandry (applause). Mr. Dixon also took occasion to remark that that part of Mr. Charnock's lecture relative to the improvement made in the atmosphere by drainage was highly important, and worthy the consideration of every lover of his species (applause).

The Chairman then, in a very amusing manner, proposed "The Bachelors," which called forth a few remarks from several present, amongst whom was

Mr. Kagenbusch, who made some observations on the importance of a right use of chemical manures. It was absolutely requisite that proper food should be supplied to plants as well as animals; hence the necessity of right views on the subject. He looked upon agricultural science as but in its infancy; and, therefore, every man who contributed to the stock of that branch of knowledge ought to be encouraged. He strongly urged the necessity of farmers taking care of their farm-yard manure, both liquid and solid; and the propriety of preventing the escape of volatile gases from the manure-heap. Mr. Kagenbusch concluded by observing that the labours of the practical farmer and theoretical chemist ought to be always united, in order that the greatest amount of benefit might be deived from the soil.

After the health of Mrs. Hawking and family had been drunk, a desultory conversation ensued on the subject of the potato disease, and at its close the company separated.—*Yorkshire Gazette.*

ON THE PREVENTION OF SMUT IN WHEAT.

Sir,—*Arsenic*—that dangerous and deadly poison—having been recommended in your Journal* as the *best* specific, allow me to caution your readers against the use of that destructive mineral; and to request its advocate, and all others ignorant of the virtues of blue vitriol (sulphate of copper), to test its merits, under my direction, before they use or recommend that dangerous antidote, being fully persuaded it will be found equally if not more efficacious as a preventive, the operation much more simple and expeditious, and the seed fit for immediate use (drilling excepted—for which a few hours only will be requisite) without the aid of lime or any other substance, which greatly injures the drill, and destroys the sacks.

The apparatus required is precisely the same as that already recommended, and the tub to be nearly filled with the solution at the rate of 1lb. to six gallons (if the seed is already tainted) of soft water, and no other boiling water is required than sufficient to dissolve the vitriol, which is best done by a few quarts poured into a basin, until a sufficiency is dissolved to cover the basket, which should be sunk to the bottom of the tub and the wheat *poured through the solution*, and no stirring will then be required, as the smut-balls and other impurities will be more effectually separated by that process. Skim when requisite and lift it immediately, and let it drain half a minute to economize your solution, and it may then be put in sacks or left upon a heap, and will in a few hours be more adapted for drilling than under any other process. As the solution wastes, add in proportion of 1lb. to seven gallons if your seed is clean, and this will be found effectual, and at a cost of much less than one penny per bushel.

I remain, dear Sir, yours obliged,

Thos. King Thedam.

Little Braxted, near Witham, Essex,
Oct. 27th, 1848.

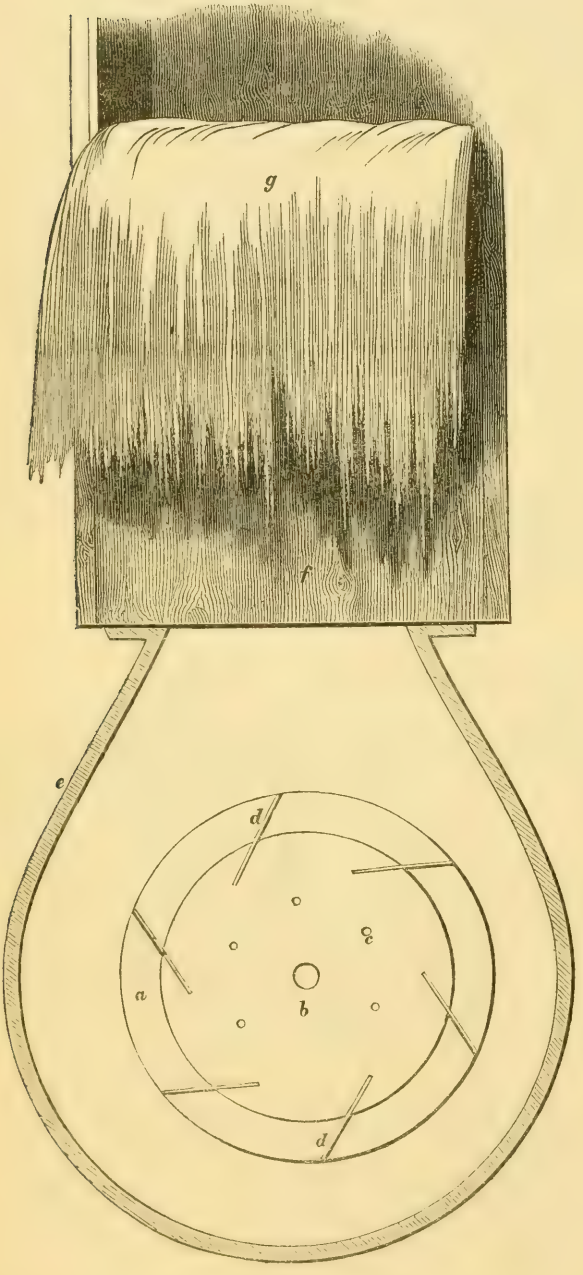
P.S.—Lime must be carefully avoided, and hard water is rather injurious.

—Mark Lane Express.

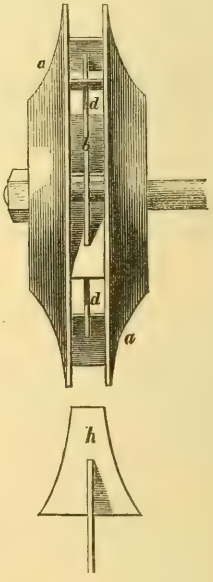
* Vide "Mark Lane Express," Oct. 5th, 1847.

APPOLD'S CENTRIFUGAL PUMP FOR DRAINING MARSHES.

FIG. 1.



FIGS. 2 & 3.



We have been much gratified, in the past week, by the inspection of a rotary pump on a new and simple principle, and which for execution, in proportion to its size, particularly for draining land, is perhaps unequalled by any other description of machine for raising water, now in use. It consists of two circular sheets of tinned copper, bevelling out towards the centre, somewhat in form of a lamp reflector; these, with a centre plate, 9 inches in diameter, are connected together by six fans, soldered to the outer discs, and into slots in the centre plate. The openings, or chambers, round the periphery are 1 inch in width, and at the centre the outer plates are 4 in. apart. The water is admitted through central openings in the outer discs, 6 in. in diameter, the centre plate thus dividing the cylinder into two compartments; the cylinder turns on an axis, which passes through one of the openings, sufficiently through the centre plate to receive a screw-nut on the other side, and make the whole secure. The cylinder is covered with an iron case, represented in the adjoining diagram, having a rectangular opening on the upper surface, 9 in. by 7 in., for the eduction of the water, and from this rises a wooden tube, or chamber, 10 inches square, reaching to the top of the apartment. Six feet above the surface of the water, there is an opening in this tube, 14 in. long by 10 in. wide, from which the water is ejected, but which is closed when it is required to carry it to a greater height in the tube. The pump, with its case, is placed in a cistern in the basement story of the building, 6 ft. ½ in. long, 3 ft. wide, and 3 ft. deep—thus giving, on an average, 9 gallons of water for every 1 inch in depth; it is worked by a steam-engine of admirable construction, and to which, as also to the pump movement, the most approved means for ascertaining the number of strokes per minute, quantity of water delivered, &c., such as dynamometers, indicators, &c., are attached. By the aid of this engine, the extensive and convenient situation of the premises, and a constant and abundant supply of water, the pump could not be in a more favourable position to give it a perfectly fair and impartial trial.

On the occasion of our visit, the proprietor in the first place kindly directed the pump to be taken to pieces, which was then cleaned, and from which the drawings for the subjoined diagrams were made. It was then again put together, and, in the first experiment, an open iron tube, about 5 ft. long, and 12 in. diameter, was placed vertically just beneath the rectangular opening in the wooden tube. The engine was then set to work, and the effect was truly astounding. The water instantly rose, rushed through the opening, and not only kept the iron tube full to the brim (although, of course, continually escaping from the bottom), but frequently rose above the top of the 14 in. by 10 in. opening. Several other experiments of 5 sec., 10 sec., &c., timed by a seconds watch, were taken, and were all completely satisfactory, averaging, with 538 revolutions per minute, a discharge of 1093 gallons per minute, which, for a circular opening, 1 in. wide, and 38 in. circumference, between something like two plates, is, we conceive, a somewhat respectable performance. The wooden tube was then removed, the water in the cistern lowered to a level with the upper surface of the pump case, and on the engine being set to work, we were gratified with a splendid fountain, from a base of 63 superficial inches, of no mean pretensions. On again adjusting the wooden tube, and a slope placed beneath the opening, a powerful waterfall was represented, to the no small consternation of the tubs, baskets, &c., strewed about the premises, and which would have worked a good-sized water-wheel.

In making these remarks, however, we must not be understood to induce the belief that this is an exhibition merely. The pump is kindly shown by the proprietor to gentlemen who may feel an interest in new and successfully mechanical arrangements, to whom it will afford much gratification. The machine certainly appears to us to be most efficient, simple, and hardly possible to get out of repair to any serious extent; and it is but justice to the inventor to say, that he has no idea of patenting it, but leaves it open for the benefit of those who feel convinced of its capabilities, and disposed to use it.

Description of Diagrams.—*Fig.* 1 is a lateral section of the cylinder and iron case, with the wooden tube, above shown in perspective, and the water flowing from the orifice. The distance from the upper surface of the case to the bottom of the opening is not in scale, as to have drawn it so would have lengthened the cut some 11 in. *Fig.* 2 is a transverse section of the cylinder; and *fig.* 3 is a plan view of one of the fans on the centre plate; *a* is the outer plates of the cylinder; *b*, the centre plate; *c*, five holes in the centre plate, by which it is screwed up to a corresponding plate on the axle, or shaft. A sixth hole is omitted, to secure its always being put on the correct way with facility; *d*, the fans, placed at an angle of about 45°, with a line drawn through the centre; *e*, the outer iron case; *f*, the square wooden tube. The axle, or shaft, it will be seen, as described above, has a bearing only at one end, where it passes through stuffing boxes in the side of the case and cistern, on which is a wheel 6 inches in diameter, worked by a gutta percha band from the driving-wheel of the engine, which is 48 inches in diameter. On the axles of the 6-in. wheel is an endless screw, with which can be thrown in gear, or liberated at pleasure, an indicator, for ascertaining the number of

strokes per second, or minute, made by the pump cylinder. Upon the whole, the apparatus appears to us most complete and effective; and we should expect, now the machine is thus publicly described, many, from its economy in construction and its power, will avail themselves of its use.—Mining Journal.

SMITHFIELD CATTLE MARKET.

We have received a pamphlet entitled "An Inquiry into the Present State of Smithfield Cattle Market; shewing the Tendency of the Present System to reduce the Profits of the Graziers," published by Ridgway, Piccadilly." Our sentiments upon this subject are already well known. We have frequently proclaimed Smithfield Market to be highly injurious to the interests of the graziers, inconvenient to the butchers frequenting it, prejudicial to the public through the deteriorated condition of the meat arising from the fevered state of the animals when slaughtered, which is occasioned by the sufferings which they endure; a nuisance to the neighbourhood in which it is held, and dangerous to persons passing through the streets in the vicinity on the market days. The pamphlet now before us contains a mass of information upon all these points, to thoroughly understand which we strongly recommend its perusal. We propose calling attention to some leading parts of the question only.

The continuance of Smithfield market must be ascribed to the combined influence of the salesmen, the Smithfield bankers, and the Corporation of the City of London. It has been asserted that the butchers were unfavourable to the removal; but we find that—

"In the year 1828 a petition of a deputation from a committee of master butchers in the metropolis was presented to the Lord Mayor and Corporation, from which we extract the following sentences:—

"'That your petitioners and the trade in general suffer very great loss and inconvenience for want of sufficient room in Smithfield market to transact their business, and that the cruelty complained of by the public chiefly arises from the same cause.

"'That animals of every description brought there for sale are deteriorated in quality and lessened in value by various descriptions of ill-usage, to make them occupy the smallest extent of room possible in the market during the period of sale there.'"

This petition was signed by 1,527 master butchers, being housekeepers of London, Westminster, and parts adjacent. A committee of the House of Commons was appointed to inquire into the subject, and made a report, in which, amongst other things, it appears that—

"One witness being asked if he had made any calculation as to the loss sustained by the bruises inflicted on cattle, states that taking the number of head of cattle, say 3,000 weekly, and sheep, lambs, and pigs, 30,000, the loss upon the cattle and beasts make 3s. per head, the loss upon the sheep 6d. per head, which is £62,000 per annum, and the meat so bruised and deteriorated is sold at a reduced price; thus the present loss, allowing for the increase of numbers, must be £100,000 a year at the least."

We have, upon a former occasion, referred to the proceedings before the Committee of the House, which sat in 1847. We will, however, quote the evidence of Mr. Anderson, of Oakley, near Bedford, given in the pamphlet now under consideration. The question being in respect to instances of cruelty to the animals, he is asked—

"In what way were they ill treated?—I have witnessed in Smithfield on four different occasions, when I have gone there to see my beasts, which were of very good quality, they have been put into ring-droves, where they have been crammed in so thick that I have not been able to see my animals for two hours, and when they have been brought out they have been *so disfigured with mud, and bleeding*, that I should not have known them unless the mark was pointed out to me; I can prove that very clearly.

"With marks of cruelty upon them?—Yes, by blows and by the goad.

"Have you remonstrated against that treatment?—In one instance I did: not about my own, but about another person's animal; that was at the bottom, opposite where the calf pens are. I saw one animal there which they had some difficulty in getting back; a man deliberately took a goad, and *struck him in the eye, and took his eye out;* I remonstrated with him, and he said, 'It would serve you right if I did the same to you.' On another occasion I saw an animal which had lost its horn; it had been knocked off, from some cause or another; I do not mean to say from any cruelty done at the market: the loss of a horn is a very painful thing: they could not get that animal out; whether it was from pain I will not take upon myself to say; I saw a man strike the animal three times *over the fleshy part where the horn had been.* I spoke to the man, and he said, 'Well, sir, what can we do? the space is so narrow we cannot get them back.' And I believe that to be true. I do not say it was wanton cruelty. When I remonstrated with him that was the answer he gave me, 'What can I do? the space is so small.'"

With regard to the deficiency of space, ample evidence was given before the Committee in 1848; and that it cannot be legally enlarged is shown by the opinions of the Recorder of the City of London and the Common Sergeant—*city officers*—who state—

"We are of opinion that the Corporation have no legal authority to make use of their lately-purchased freehold estate in Long Lane by way of extension or enlargement of the present Smithfield Market. *No toll can be legally demanded or taken on such extended market-place, nor will a sale there operate as a sale in market overt.* The market is granted to the City to be held in Smithfield, and the law is most clearly laid down in the case of Weyhill Market, reported in 3 Mad. Rep. 108, and in a very modern decision of Curwen *v.* Salkeld, that where the place in which the market is to be held is limited, the market cannot be held out of that boundary. *In case such an enlargement of the charter market should be made by the City, it would be an usurpation on the Crown, for which they would be answerable in an information of* quo warranto, *in which judgment of a moval of such usurped franchise would be given against them, and they would be fined at the discretion of the Court for such usurpation.*"

This "usurpation on the crown" is at this moment clearly committed; and the parties are answerable. The mode in which the system affects the graziers is thus narrated:

"Each salesman receives consignments of stock from several graziers; and it frequently happens that when a sale is effected, say of 100 cattle or sheep, composed of perhaps 10 from one grazier, 20 from another, 30 from another, and so on, they of course vary in quality and size, the 10 or the 20 being, perhaps, far superior to those with which they are sold; but it often happens that one general average price is fixed for the whole. Thus it occurs that the judgment of the salesman is the only criterion of value, and the returns of the prices to the respective graziers must depend entirely upon his discretion; the apportioning of the money taking place in the money-taker's office. Would this be so, if people could sell their own stock? Is it not possible that, in the event of one of the employers being present at the market, he might obtain a better price at the expense of his less fortunate competitor, who might be unable, from distance or other cause, to be present.

"Again, we will suppose a case of a consignment of 100 cattle or sheep by one person: these may be sold in one lot at an average price; but in order to satisfy his principal, it is not unusual for the salesman to render a fictitious account, showing that the sale was effected by tens or twenties to different persons, and at prices varying, but making up the amount, perhaps the amount for which they actually sold. The reason given for this proceeding is, that the salesman wishes to gain a name for making exertion to obtain the best prices, which might be questioned if the sheep were returned as sold in one lot. These are only some few instances out of many; from which we infer that the whole system is bad, and that the graziers, farmers, and breeders of stock are even more interested than the public at large in obtaining a change."

The desecration of the Sabbath, in preparing for the Monday market, is thus described:—

"It is a fact that cannot be too forcibly urged upon the consideration of the public, that in connection with Smithfield market not less than *fifteen hundred persons* are necessarily employed the whole day on Sunday in preparing for the market on Monday. On enquiry at the places where the cattle are usually unshipped from the steam vessels, it is found that Sunday is the busiest day, it being the custom so to arrange the sailing of the packets that, wind and weather permitting, they arrive on Sunday in order to be in readiness for the Monday markets. The consequence is that the repose of the whole neighbourhood is disturbed by the noise of suffering cattle and sheep, and the uproar of the men in whose power they are. Let us imagine a ship arriving at Blackwall at the time when the usual service is going on at the places of public worship: the vessel has on board, perhaps, 150 oxen and 500 sheep. Immediately the place is in a state of commotion, the cattle lowing, the sheep bleating, the men roaring, and the confusion of the busiest of busy days taking place on the day appointed by God himself as one of holy rest. While the religious of all classes are returning thanks for past mercies, or craving at the hands of a bountiful Creator renewed blessings, a scene is enacting not far distant, where the principal features are cruelty, profaneness, and blasphemy; where the day is actually set apart, fixed upon, and used as one for the more especial consideration of worldly interests and worldly business, and where such scenes prevail as must tend not only to demoralize most extensively all who take part in them, but wound the feelings and disturb the solemn impressions of those who look upon these proceeding as a wilful violation of God's word; and why is this allowed? why do the authorities, who look with a stern eye upon the poor basket-woman who seeks to obtain a precarious existence in the streets, shut their eyes to this enormity?"

It is strange that the Corporation of the City of London should adhere with such pertinacity to the continuance of this nuisance, seeing that their interests would not be prejudiced—nay, it is asserted they would be benefited by the removal, as appears from the following extract:

"It is generally admitted, that if the market were removed, the space it now occupies would be far more profitable to the corporation than at present; we believe that the City does not at this moment derive a net income of £6,000 a-year, and it has been calculated that for ground-rents for spacious and handsome buildings, allowing ample room for broad thoroughfares, an amount of upwards of £10,000 a-year might be obtained, and without the outlay by the City of one shilling. Very much greater expectations have been held out by sanguine persons, not without plausible reasons, but the above ought to be satisfactory to the most avaricious."

That Smithfield Market must be removed, and that speedily, no rational being can doubt. Neither can there be much question as to the spot where the future market should be held. The new market at Islington, erected by the late Mr. Perkins at a cost of nearly one hundred thousand pounds, affords ample accommodation both as regards buildings for the cattle and extent of standing room. It is most conveniently situated for the northern, eastern, and western railways, along which by far the greatest number of cattle are brought, and is in every respect well adapted for the purpose for which it was intended. We understand that it has recently been put into thorough repair, and that a market will be opened, and sales of stock will take place every Thursday, under the authority of the Act of Parliament obtained at its erection. Stock conveyed to this market are placed in sheds, where they are as well accommodated as in the feeding yards of their owners,

and if brought by railway any reasonable distance will be almost as fresh as when they left their owners' yards. Contrast the appearance of an animal offered for sale under these circumstances with that of another driven, harassed, and huddled up in the crowded and confined area of Smithfield. Whether the farmers and graziers will arouse themselves, and demand a remedy for this monster evil, and unquestionable injury to their interests, we know not; but this we do know, that the public will not endure the nuisance much longer.

SHEEP BREEDING.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

"It was an absurd prejudice which formerly prevailed against breeding from animals between whom there was any degree of relationship. For had this opinion been universally acted upon, no one could have possessed a peculiar breed, for the produce of one year must have been dissimilar to that of another; and we could have profited but little of any superior animal we might have had the good fortune to possess."

SIR JOHN SEBRIGHT.

Then according to this high and unimpeachable authority, without something of in-and-in breeding, we can have neither consistency nor character in our flock, as the lambs of each succeeding year will necessarily be heterogeneous and alien to their predecessors; and this is a fact so potent that sophistry can but evade, but not controvert it. And let the advocates of continual crossing gloze it as they may, the consequences are so polychronious as to entail mischief upon many generations yet to come; while affinity breeding, with judicious selection, may be beneficially practised to strengthen good properties, in fixing any variety that may be thought valuable, or in developing and establishing the more excellent form and quality of a good breed. And no cross can be established and permanently maintained without proceeding to what is called in-and-in breeding between those animals, resulting from the first cross which may chance to have the homogeneous or corresponding organization meant to characterize the breed.

As to what is called blood, it is grooms' phraseology, and unworthy a gentleman to use—it is organization. We are continually hearing of high breds and fine breeds, the word has been so bandied about that we have ceased to attach any definite meaning to it. We seldom see an advertisement of farm stock without the accompanying bepraisement of "that high-bred herd of cattle," or "that very pure breed of sheep;" and in the majority of cases it is so believed, simply because so stated. But I would ask what purity, what breed can we expect from a mongrel mixture of yesterday? A farmer goes a considerable distance to a ram letting, and is told the animal he has selected was bred from the very pure flock of a Mr. Somebody, at another long way off, and that is all that is known or cared about breed or purity. The very letter himself does not know what his own next crop of lambs will be, nor can he, with any confidence, predicate what will be the form and character of the offspring of any particular ewe. And how could it be otherwise under our prevailing disreputable and unscientific practice? To the winds then with three-fourths of the inflated words about purity and breed: it is a jargon so common that it has ceased to be ridiculous.

It should never be out of a breeder's thoughts that organization is not easily got rid of, as it is all but indestructible; therefore faulty organization is of vast consequence, though individuals, and in *some cases whole families*, may and do improve; and improvement of their race is the prerogative of in-and-in breeding, with skilful selection. And here I would ask any honest man whether he dare himself use, or recommend to his friend, any ram he has himself promiscuously bred, though he fetched his tup from the finest of all those very fine breeds? As he is mute I will answer for him—No, because the errors of the progenitor are not eradicated, and never will be, till years of observation, science, and common sense are brought to bear on them.

The philosophical, but not well understood, advantages of affinity breeding may be familiarly explained thus:—When both sexes are in their highest vigour and perfection, it is the male that predominates in giving the locomotive system, character, or shape to the progeny; and it is preferable that the female should give that system the vital, which in her is always most developed; hence the necessity of seeking a male of ancient and unstained pedigree, which cannot possibly be found in any animal the produce of a recent cross. And this is so much a truism as to need no further illustration.

I am, Sir, yours, &c.,

November 10*th*, 1848. J. W.

WHAT IS THE CAUSE OF CORN BREAKING DOWN?

It is well known that some districts, or sometimes occasional fields in an otherwise favoured district, are particularly liable to injury from the corn breaking down or *lodging*, before it is properly filled. If we were called on to point out special localities where this happens, we would say, 1st, on drained or improved bog; 2nd, on newly broken up pasture fields; and 3rd, wherever the land is well farmed, either by using large quantities of farm-yard manure, or by eating green crops on the land. In the last case the evil is very annoying, because the industrious farmer suffers more than his indolent neighbour.

This evil has generally been attributed to the want of a proper quantity of silica to give the straw strength and firmness. With the view of settling this important question, the subject has been investigated by H. C. John, of Hohenheim, and still more extensively by Professor J. P. Norton, of Yale College (Silliman's American Journal, and Highland Society's Journal).

The examination by the former has not produced any satisfactory results, because whilst he finds *less silica* in the straw of wheat which had been broken down, as compared with that which did not break down, it is somewhat remarkable that he should have arrived at the very opposite conclusion respecting oats. Upon this ground we are disposed to think that the experiments by H. C. John are unworthy of credit.

Professor J. P. Norton's paper is exceedingly interesting, as he has examined each part of the grain and straw; and well do his investigations bear out the fact that the more minutely the products of nature are examined, the more beautiful adaptations of the various parts do we discover.

We will here introduce two tables, the first of which gives a comparative view of the per-centages of ash yielded by all the parts of the plant in different specimens; and the second, an analysis of each of these parts.

1.—Analyses of Oat.

	Hopeton.	Potato.	Sandy.	Mean of 5 specimens
Grain	2.14	2.22	1.67	2.00
Husk	6.47	6.99	6.03	6.75
Chaff	16.53	18.59	18.97	16.09
Leaf	8.44	14.59	15.92	10.88
Top straw	4.93	9.22	11.01	7.77
Middle straw	6.11	7.41	9.01	6.66
Bottom straw	5.33	9.76	7.30	6.93

2.—Analysis of the above Hopeton Oats.

	Grain.	Husk.	Chaff.	Leaf.	Top Straw.	Middle Straw.	Bottom Straw.
Sulphuric acid	..	9.61	5.32	14.80	16.33	18.45	13.29
Phosphoric acid	49.19	1.04	..	..	..	..	..
Chloride of sodium	0.35	0.24	5.11	2.29	3.13	3.03	15.36
Phosphates	..	..	5.84	6.13	2.84	3.03	0.78
Potash } Soda }	31.56	10.26	7.96	14.86	19.09	21.80	43.17
Lime	5.32	1.95	4.53	6.99	7.02	7.23	6.06
Magnesia	8.69	0.38	1.84	2.55	2.84	2.91	2.07
Peroxide of iron	0.88	1.58	0.24	..	0.30	1.40	0.61
Peroxide of manganese	..	0.92	..	..	..	..	..
Soluble silica	0.89	4.46	11.99	5.90	5.13	7.34	5.03
Insoluble silica	0.98	68.39	56.05	45.75	43.31	33.14	12.25

The above shows the amount of ash in each part—calculated dry.

It will be observed that in the above examination the plant has been divided into 7 different parts—the top, middle, and bottom straws, the leaf, the chaff, the husk, and the grain. Of each of these parts it has been distinctly shown—

"1st. That it varies from every other, both in the quantity of its ash, and the composition of that ash.

"2nd. That different specimens give different results in the above respect.

"3rd. That in these variations the distinctive character of each part is always preserved, the compo-

sition of the ash of the husk, for instance, never being like that from the straw or leaf.

"4th.—That the soil has a direct influence on the quality and quantity of the ash.

"5th. That each part is furnished with an ash, in quantity and quality peculiarly adapted to the function the part is destined to fulfil.

"The silica, for instance, is in the straw so distributed as most effectually to strengthen those parts which need its supporting power. In the leaf it sustains an extended surface of pores in contact with the atmosphere. In the chaff it forms an impervious coating for the husk, until that part has also received a supply which enables it to protect the grain upon which the perpetuation of the species depends—

"Equally beautiful are the facts which we discover respecting the alkaline sulphates and phosphates. We find little of the latter in the whole length of the straw, in the leaf, and the chaff; but when we arrive at the grain, the alkaline sulphates disappear, and the phosphates take their place. These have passed up the whole length of the stalk, avoiding the leaves and the chaff, and at last, by a law infinitely more unerring than any which human wisdom can devise, deposited themselves in the very place where phosphoric acid was most needed, in order that, as part of the food, it may build up the bones—the framework of the animal body."

The following remarks are such a direct answer to the question we proposed at the head of this article, and so much more to the point than anything we could ourselves have said, that we have no hesitation in giving another extract from Professor Norton's paper. "The composition of every part of the healthy plant being known, the means for obtaining a healthy crop are obvious. The inorganic part being entirely derived from the soil, to the soil must attention be directed in case of failure, and its deficiencies ascertained. With these results before him, any farmer may see that if his crop refuses to stand, the chief cause is probably a lack of soluble silica in the soil. In some of the alkaline silicates now manufactured for sale, he may find a ready means of remedying the defect."

ST. GERMANS FARMERS' CLUB.

At the ordinary monthly meeting held at the Town Hall, St. Germains, on Friday, the 13th October last, the subject of "Practical impediments to British husbandry" was introduced by Mr. H. Symons, of Whifferton; Mr. Palmer, Cuddenbeak; P. Palmer; W. Palmer; Nich. and Richard Rosevear; W. Vosper, Minner; W. Vosper, Hay; P. Vosper, Filland; C. T. Burnard, Geak; — Tapson, sen. and jun.; W. Herring; — O'Dogherty; R. Polgreen; and a good assemblage of the agriculturists of the district.

The most prominent impediments, as detailed by Mr. Symons, were as follows:—

1st. Insecurity of capital invested in agriculture by both landlord and tenant, arising from the want of a more simple and efficient code of laws which shall secure to each his right, and giving the latter remuneration on quitting his farm for any permanent or temporary improvements in building, draining, fencing, manuring, extra cultivation, &c.; and to the former, security available out of the tenant right, for any injury by improper cultivation, and further security from the incoming tenant by the amount he would invest on entry for the existing tenant right. Thus investment would be encouraged by security, and the produce and fertility of the soil increased; while under the present state of things, the outgoing tenant uses several of the last years of his term in withdrawing all that the law allows, and frequently a little more, all of which the incomer must add to establish average fertility—thus several years are lost to him, and a proportionate amount of produce is lost to the community.

2nd. Insufficiency of capital, arising from insecurity; and hence the inducement to occupiers to spread their capital over a larger breadth, and in a more superficial manner, withdrawing from the soil from year to year all they put in; thus nothing is done well, no store is laid up in the soil, while with security of vested interest the farmer's economy would be to confine his operations to fewer acres, increasing the fertility of the soil, and yielding a larger produce for the benefit of all.

3rd. Clogging clauses in leases, arising also out of insecurity. The landlord naturally fears maltreatment of his land, to prevent which he restricts the cropping, manuring, &c., and thus shuts out the improvements which are being developed from day to day.

4th. Want of convenient farm buildings, arising partly from the limited interest of owners, partly from their negligence and want of interest in the welfare of their tenantry, and in no small degree from the carelessness of tenants as to their landlord's interest in the preservation of his property. Landlords should put up the buildings in order, and the tenants so keep and leave them, under proper covenants on both sides so to do; the tenant being allowed the average cost of such repairs as a diminution of rent; and at the end of the term let the whole state of the farm be considered and balanced accordingly.

5th. Want of accommodation for labourers in convenient cottages near their master's premises, due attention to which would save the labourer much physical wear and tear, and establish a stronger tie between employer and employed, hence mutual confidence and a better classification of labour.

6th. Want of education in tenants and labourers. Hitherto a youth fit for nothing else has been set apart for a farmer; thus the important business of fostering nature, animate and inanimate, so as to raise the food of man proportionate to his wants, has been committed to the most ignorant; and as to the labouror, who is more worthy of being taught to know himself and his duty than him on whom the stength and support of the community depend.

7th. Small enlosures and hedge-row timber. Robbers of both earth and air are timber and hedges; and the increased labour occasioned by the numerous small and crooked fields is immense, in addition to their being nurseries for mud and filth.

8th. Want of drainage; the importance of which is now so generally admitted but slowly attended to.

9th. Game, when closely preserved, is a great nuisance. On one farm in this locality, of 500 acres, upwards of 2,500 rabbits were killed in one year not long since; the nuisance is now, however, much abated.

Last, but not least, the law of pauper settlement, which seriously increases the poor rates by the cost of litigation, and prevents the skilful labourer from carrying his labour to the best market; thus checking that laudable emmulation which stimulates the energies and draws out the ability of man, and what is of still more importance, prevents due care for the destitute.

A long and animated discussion followed, giving ample evidence of the spirit of improvement existing in the district, the best thanks of the society being unanimously voted to Mr. Symons and the chairman (Mr. Rosevear)—Plymouth Journal.

LLANELLY FARMERS' CLUB.

The following were the successful competitors at the cattle show of this club, held on the 11th of October last:—

STOCK.

Best two year old bull, £2, and best heifer (yearling), £1, to Mr. John Rees, of Maesardarven.

Best yearling bull, £1, best cow in calf or in milk, £1, and the best two year old heifer, £1, to Mr. David Humphreys, of Machynys.

[The whole of the animals which gained the foregoing prizes were of the Castlemartin breed, and were the property of the exhibitor six months previous to the show.]

Best bull of any age or breed, £3, best cow in calf or in milk, of any breed, £1, and the best two year old heifer of any breed, £1, to Mr. Wm. Rees, of Llanelly.

The fattest ox, three to five years old, £1, to Mr. Rd. Jones.

The best yearling heifer of any breed, £1, to Mr. Rd. Howell.

SHEEP.

The best ram of any age or breed, £2, to Mr. Geo. Barnes.

PIGS.

The best boar, £1, to Mr. Geo. Barnes.

The best sow, £1, to Mr. De Walters.

HORSES.

The best stallion for hunters or hackneys, £2, Dr. Thomas.

The best brood mare for hunters or hackneys, £1, and the best two year old colt or filly, £1, Mr. Jno. Rees.

The best brood mare of the cart breed, £1, and the best yearling colt, £1, to Mr. David Humphrey.

The best two year old colt or filly of the cart breed, £1, and the best yearling ditto, £1, to Mr. Moodie.

THORNAGE AGRICULTURAL STEAM COMPANY.—In the year 1847, a number of gentlemen in the neighbourhood of Thornage formed themselves into a company, under the above title, for applying steam-power to the thrashing of corn, and for other purposes. On Monday last the first annual meeting was held to receive the report of the superintendent as to the working of the engine under his charge. The accounts, after deducting all expenses, showed a return of nearly twenty per cent., and the shareholders agreed to accept a dividend of ten per cent., and to form a fund with the surplus to meet contingencies. It is highly gratifying to those concerned in the enterprise, as well as to the public generally, to find, that this first attempt at introducing steam-power for agricultural purposes, into a vicinity where its benefits were not previously appreciated, has been attended with so much success. Lord Hastings, Mr. F. Astley, Mr. Sparham, Messrs. Boyd, Mr. J. Page, Mr. H. Burrell, Mr. Sheringham, Mr. Woodcock, and other eminent agriculturists, are shareholders of the company. It is only right to add, that it was owing to the indefatigable exertions of Mr. H. Burrell, that this great agricultural benefit has been obtained.—Norfolk Chronicle.

THE USE OF THE AMMONIACAL LIQUOR AND REFUSE LIME OF GAS WORKS, FOR AGRICULTURAL PURPOSES.—A question may arise as to the best manner of using it and the most suitable time. An exact and full answer to this question could not be given without a lengthened and careful set of experiments, but to some extent it may now be answered. From the examples quoted of its use, it will be seen that if the ammonia water be used in too strong a state, the effect for a considerable time is injurious, it burns the plant. It must then be diluted or mixed with water. The most proper strength for using it would be to mix the ammoniacal liquor of the strength (3 Tweddle) it is sold at the gas works with at least five times its proportion of water, or 1 gallon of ammonia water to 5 gallons of water. If it be laid on the land in wet weather, that is during a shower, it may be used stronger, about half liquor and half water; but it is not economical to use it during continued rain, as then the rain carries it lower than the roots too quickly. It should not be sprinkled on the land on a clear sunshiny day; if it be, a considerable porrtion of the ammonia will fly off, owing to the heat of the sun. Cloudy weather is the most fitting for its application. A watering cart, such as used for watering the streets of towns in dusty weather, appears to be the best contrivance yet thought of for applying it when it is used on meadow land, and for equally distributing it. An excellent mode of using the ammoniacal liquor would be to mix it with substances that will absorb it, such as dry sawdust, dry coal-ashes or sifted cinders, burned earth or clay, charcoal, and the dry scrapings of roads. It can, when thus absorbed, be thrown on the land with a spade or ploughed in. As to the most suitable time of the year to apply the ammoniacal liquor: For grass lands the best time would be, after the grass has begun to grow in the spring, and as late as it can be applied without injury to the growing grass from treading down; but, if used at this time it should be used in a weak state—about 1 gallon to 7 of water. The most convenient time, however, for grass lands, would, under all circumstances, be in the early spring, that is, just at the commencement of the growth of grass. Immediately after a first cutting of grass a sprinkling of ammonia water would produce an abundant second crop in a short time; then it might be used a little stronger, say about 1 part to 5 parts. When used for seeds or roots they should be allowed to sprout before its application, and then used in a very weak state, or else used as a compost, before they are sown or set.

FARM LABOURERS' WAGES.—At the meeting of the Sudbury Agricultural Society, the Mayor of Sudbury gave the following account of the plan adopted by a friend of his in Essex, with respect to labourers:—He had adopted a sliding scale, regulated by the price of flour. When flour is 40s. a sack, he pays 8s. 6d. a week, advancing 6d. per week for every advance of 3d. in the price of a stone of flour. Thus when

flour is 45s. a sack, he pays 9s.; when 50s., 9s. 6d.; and so on in proportion. On the 18th of May, last year, flour rose to 80s. the sack; he then paid the large sum of 17s. a week for about a fortnight; but in September of the same year it was again down to 40s., and he only paid 8s. 6d. In December of that year it was 44s., and he paid 9s. He tells me this system works well for a man, his wife, and *two* children; but if the family is large it is not enough. It has given great satisfaction to his labourers, and he never hears any murmuring about the high price of flour. They will say to him, on Saturday night, "Master, flour rose 3d. this week." "Very well, John, that makes no difference to you—there is 6d. more for you." On an average of years, he does not pay more than his neighbours, but the plan is very much liked by the labourers.

HAIL INSURANCE.

SIR,—The following paragraph appears in this week's *Banbury Guardian*,—

"NORTHAMPTONSHIRE LANDLORDS. — We have heard, with much pleasure, that General Howard Vyse, and Captain R. Howard Vyse, M.P., have liberally returned 40 per cent. on the Michaelmas rents to their Boughton farm-tenants, in consideration of the damage sustained by their crops from the severe hail-storm which occurred in the autumn."

The first reflection hereon that presents itself to the mind is, how fortunate are the tenants who rent under such worthy, liberal, and right-minded landlords as General and Captain Vyse! The second is, how unfortunate are those tenants whose landlords are deficient either in the will or the ability to aid the suffering farmers! and the third, how much more wisely do they judge and act, who adopt the principle of "self reliance," and when overtaken by a hailstorm among their crops receive the full amount of their losses—not as "alms," but as a strict legal right, duly purchased and paid for! To these remarks I beg leave to append the names and addresses of various farmers who have received compensation for losses by hail, in my agency, since July 1st, 1845,—

	£	s.	d.
Mr. John Boddington, Souldern	35	11	7
Thomas Creek, Esq., Upper Heyford	5	5	0
Mr. William French, Doddington..	28	0	4
„ James Harbidge, Islip Mill	13	3	3
„ J. Marten W. Harris, Charlton, Brackley ..	7	8	3
„ William Malings, Clifton, Deddington ..	51	8	0
„ John Painter, Aynho, Northamptonshire ..	65	14	2
„ Robert Rogers, North Aston	9	6	10
„ John Rowland, Manor Farm, Islip	38	9	3
„ Thomas Smith, Islip	15	12	0
„ Thomas Timms, Dun's Tew	6	15	0
„ Richard Wait, Caulcot, Lower Heyford ..	3	0	0
Stephen Walker, Esq., Islip	49	8	8
Mr. William West, jun., Hampto, Poyle, ...	11	14	0
„ William Wing, Steeple Aston	9	1	3
Total	349	17	7

I remain, Sir, your obedient servant,

WILLIAM WING,

Agent to the Royal Farmers' Insurance Office.

Steeple Aston, Woodstock, Nov. 11, 1848.

TABLE TEACHING HOW TO SOW GUANO.

Cwts. to the English acre.	Weight of Guano per bushel.	Breadth of Drill.			
	lbs.	inches.			
2	56	27	1 gallon*	should sow 201 yds.	along 1 drill.
3	„	„	1	do. 134½	do.
4	„	„	1	do. 100½	do.
2	58	27	1	do. 208	do.
3	„	„	1	do. 140	do.
4	„	„	1	do. 104	do.
2	60	27	1	do. 215	do.
3	„	„	1	do. 143½	do.
4	„	„	1	do. 107½	do.
2	62	27	1	do. 222½	do.
3	„	„	1	do. 148	do.
4	„	„	1	do. 111	do.
2	64	27	1	do. 230½	do.
3	„	„	1	do. 153½	do.
4	„	„	1	do. 115	do.
2	66	27	1	do. 238	do.
3	„	„	1	do. 159	do.
4	„	„	1	do. 119	do.
2	68	27	1	do. 245	do.
3	„	„	1	do. 163½	do.
4	„	„	1	do. 123	do.
2	70	27	1	do. 250½	do.
3	„	„	1	do. 167½	do.
4	„	„	1	do. 125	do.

* Eight gallons to the bushel.

—Gardeners' Chronicle.

HARLESTON FARMERS' CLUB.

At a meeting of the Harleston Farmers' Club, held on the 25th of October, being the first since the decease of their Vice-Chairman, Mr. Robert B. Harvey, whose loss was very feelingly alluded to, previously to the introduction of the subject for the evening, namely, "The Geology of the District," the following resolution concerning him was unanimously adopted:—Resolved,

"That the club records its deep regret at the loss of its late vice-chairman and former secretary, Mr. Robert B. Harvey, and its unanimous feeling of respect for his memory, as a gentleman and a practical agriculturist, and desires to manifest its respect and regret by the energetic performance of its duties, in the hope that the Harleston Farmers' Club, in the foundation of which he took so great a part, and the interest of which he so diligently endeavoured to serve, may become and long remain his most befitting and honourable memorial."

And at a meeting of the Club, held on the 8th inst., the following subject was introduced, viz., "The identity of the interest of Landlord and Tenant," when a most animated discussion ensued, during which it was shewn that it would be greatly to the interest of both landlord and tenant, if, at the end of every agreement for a farm, whether upon lease or otherwise, a clause was inserted giving compensation for all unexhausted improvements that may have been made during the last four years of the term; and it was resolved unanimously:—

"That it is the opinion of this meeting, that in order to *secure* that identity of interest between landlord and tenant, which is so much to be desired, there *must exist such* a contrast between them as shall at once remove *all* fear and doubt on the part of the tenant regarding the *outlay* of his *capital*."

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The First Monthly Council after the autumn recess, was held at the Society's House in Hanover-square, on Tuesday, the 7th November. Present: the Earl of Chichester, President, in the chair; Hon. Captain Dudley Pelham, R.N.; Hon. Colonel A. Nelson Hood, Colonel Austen, Mr. Raymond Barker, Mr. Barnett, Mr. S. Bennett, Mr. Blanshard, Mr. Brandreth, Mr. Burke, Colonel Challoner, Mr. F. Cherry, Mr. Garrett, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Hudson (Castleacre), Mr. Kinder, Mr. Millward, Prof. Sewell, Mr. Shaw (Northampton), and Prof. Way.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, presented to the Council the Report of that Committee to the end of the preceding month; along with the quarterly statement of the general and funded accounts of the Society, and a report on the progress made in the getting in of the arrears of subscription. These reports and statements were unanimously adopted and confirmed. Mr. Shelley had leave granted him for the postponement of his motion (on the transmission of the Journal to members in arrear, and the posting of their names in the Council Room of the Society) to the December Monthly Council.

Member of Council.—Lord Portman gave notice that he should move, at the next monthly Council, the election of Mr. Foley, M.P. (President of the Stewponey Agricultural Society), as a Member of Council, to supply the vacancy occasioned by the lamented decease of Mr. Harvey.

Day of Meeting.—Mr. Hillyard gave notice that he should move, at the same date, that the meetings of the Council be thenceforward held on Mondays, at one o'clock.

General Meeting and Lectures.—The Council decided that the hour for the General Meeting of the members, on Saturday, the 9th of December next, should be 11 o'clock in the forenoon, and that on the evenings of the Wednesday and Thursday preceding that date lectures should be delivered in the rooms of the Society before the members at 9 o'clock, on such subject, and by such party or parties, as the Journal Committee in communication with the President may decide.

York Meeting.—The preliminary balance-sheet of the York Meeting was submitted to the Council by the Chairman of the Finance Committee, from which it appeared that up to that time the excess of payments over receipts at that meeting amounted to upwards of £1100, such excess being chargeable on the general funds of the Society, independently of £1775 as the amount of prizes for live stock and agricultural implements offered by the Society and awarded on that occasion, and the essays for the current year. The Council decided, in reference to Mr. Eddison's claim for the prize in the local classes, awarded at York to Mr. Stainsby, for the best sow of a small breed, "That it having been proved to the satisfaction of the Council, by the statement of a majority of the judges of pigs at the York meeting, that the award made to Mr. Stainsby was made under the mistake on their part that Mr. Eddison's sow (that had gained the prize in the Society's classes) was not competing for the local prize, it is unanimously resolved that the local prize awarded to Mr. Stainsby be paid to Mr. Eddison, the winner of the Society's prize." Mr. Brandreth Gibbs having reported the steps he had felt it his duty, as Director of the Yard, to take at York to repress a meeting attempted to be held within the enclosure of the Society's Show-yard, by some of the exhibitors in reference to the limited concessions granted to them by the Railway Companies, the Council fully confirmed the propriety of Mr. Gibbs's interference, and passed a vote of thanks to him for the steps he had so judiciously taken on the occasion referred to in his report. Communications were received from Mr. Quartly in reference to the enforcement of the fine in his case for non-exhibition, and from Mr. Bell claiming the return of non-members' entrance fee in reference to stock found, after entry, to be disqualified for exhibition. The Council did not admit Mr. Quartly's plea, but ordered Mr. Bell's entrance money to be returned to him under the circumstances stated.

Norwich Meeting.—Various documents were received from Mr. Staff, the town-clerk of Norwich, in reference to the land for the trial of implements at the country meeting of the Society, to be held next year in that city. In the absence of Mr. Thompson, who had given notice of the motion, it was moved by Mr. Milward, seconded by Colonel Challoner, and carried unanimously, that the Hon. Captain Dudley Pelham, R.N., be requested to accept the office of Steward of Implements at the Country Meetings of the Society, in the place of Mr. Shelley, who retires by rotation.—Mr. Thompson had leave to postpone his motion on the time at which implements are in future to be brought into the Show-yard, and Mr. Hamond to postpone his motion on local prizes at the Country Meetings of the Society, until the next Monthly Council.

Country Meeting of 1850.—The Mayor of Exeter transmitted various documents connected with the meeting of the Society to be held in the western district in the year 1850. These documents, along with others on the same subject from the authorities of Bridgewater, Salisbury, and Taunton, were ordered to be reserved for consideration at the proper time appointed by the Council, namely on the first Tuesday in April, 1849.

Miscellaneous Communications.—From the East India Company, through Dr. Royle, a supply of varieties of wheat from India, with a request that trial might be made of their cultivation in England, and a copy of the re-

suiting report forwarded to Dr. Royle. From Sir John Lubbock, Bart., the results of his comparative trials of various artificial manures in affecting the growth of grain crops and their produce. From Mr. Fothergill, specimen of wheat from land infested with wireworm destroyed by soda-ash. From Mr. C. O'Connor, an offer of oats of a peculiar variety. From Mr. Nicholls, a copy of Mr. M'Adams's report of his tour of inspection in reference to flax culture in Ireland. From Dr. Jones, an offer of a new manure. From M. von Pappelendam, an offer to the same purpose (both of which were declined with thanks). From Mr. Darby Griffiths, soil from the Nile. Papers on potato disease from Messrs. Quigley, Doyle, and Bishton. From Captain Stanley Carr, a supply of small-pox ovine lymph, of a mild character, for experiments in inoculation, with a proper needle for performing the operation; and a letter on small-pox in sheep; all of which were received with the best thanks of the Council, and referred to Professor Simonds. From Mr. Davies, V.S., a remedy for red and black water in cattle, and from Mrs. Holloway a plan of cure for distemper in pigs, of both which communications copies were ordered to be sent to any members applying for them. From Mr. Spooner, suggestions respecting prizes for horses; and from Mr. Pawlett, suggestions on competition for prizes for Leicester sheep. From Mr. Bannerman, remarks on competition for prizes in short-horned cattle. From Mr. R. B. Grantham, C.E., a copy of his work on slaughter-houses. From Mr. H. Roberts, a set of seven lithographed drawings, being a series of designs for cottages and a lodging-house adapted for agricultural labourers. From Mr. T. H. Leighton, plan and model connected with the drying of hay and corn. From Mr. W. Knight, a model of plan for feeding-sheds to protect cattle from the effects of bad weather in the middle of fields. From Mr. A. Moore, a communication connected with the late Mr. Bell. From Mr. Longbottom, Secretary of the Royal Polytechnic Institution, specimens of the Spongio-Piline, manufactured by the Epithene Company, for stopping horses' feet, and for other veterinary purposes. From Mr. Brown, a specimen for trial of his anti-friction compound, for cart wheels and other mechanical purposes. From the East India Company, a copy of meteorological observations made by Mr. T. G. Taylor at the Meteorological Bungalow on Dodabetta, 8640 feet above the level of the sea. From Mr. Shaw and Mr. Cuthbert Johnson, the "Farmers' Almanac" for the ensuing year. From Mr. B. E. Kelly, specimen of agricultural chart. From M. Guérin-Méneville, a series of treatises "On the Anatomy, Habits, and Mode of Destruction of Insects Injurious to Crops," "On the Rearing and Diseases of the Silkworm," and on other branches of agricultural zoology. From Mr. Colman, a copy of his work on "The Agriculture of France, Belgium, Holland, and Switzerland." Transactions of the Royal Academies of Lille and Lyons. Journals of the Royal Agricultural Improvement Society of Ireland, the Highland and Agricultural Society of Scotland, the Geological Society, the Statistical Society, the Horticultural Society, and the "Farmer's Magazine;" for which, and other presents and communications made to the Society, the Council ordered their best thanks.

The Council then adjourned to the 5th of December.

NEW MEMBERS.

Blake, Francis John, Norwich
Bond, Barnabas, Alburgh, Harleston, Norfolk
Coulson, John, jun., Kenning Hall, Harling, Norfolk
Crosse, William, One-house Hall, Stowmarket, Suffolk
Dowson, Henry G., Geldeston, Norfolk
Goddard, Thomas, St. Fagon's, Cardiff, Glamorganshire
Howlett, John, Bowthorpe Hall, Norwich
Hugill, John, Whitby, Yorkshire
Kirkby, Thomas, Cuxwold, Caistor, Lincolnshire
Noel, Charles, Peckham House, Hinckley, Leicestershire
Postle, Rev. Edward, Yelverton Rectory, Norwich
Shiffner, Sir Henry, Bart., Combe-place, Lewes, Sussex
Sowerby, Francis, Aylesby, Great Grimsby, Lincolnshire
Steel, George, jun., Depden Elms, Bury St. Edmund's
Thompson, Henry Kett, Burgh-Apton Cottage, Brooke, Norfolk
Wood, William, Gopsall House, Twycross, Leicestershire.

EVIDENCE OF ANCIENT DRY LAND.—In the upper new red sandstone of Weston Bank, near Runcorn, in Cheshire we have the first positive evidence hitherto discovered of dry land in England. At Weston, in the rock above named, about thirty-two feet from the surface, and in the higher part of the deposit, there is a thin bed of red clay, from about a half to three quarters of an inch in thickness. This clay affords impressions of the feet marks of the cheirotherium, rhynchosaurus, several other reptiles, numerous worm marks, and beautiful lines of desiccation, similar to what a bed of moist clay would undergo, under a hot sun, at the present day. The red clay was evidently deposited by water, which afterwards receded from it, and left it uncovered. When this deposit was in a plastic state, the animals walked across it and left their tracks; subsequently the sun or air, by desiccating the clay, produced wide cracks, and the water at length returning, again filled both the feet marks and cracks, and made a beautiful cast of them in sand. Thus do these most interesting specimens not only show us the tracks, left countless ages ago, of some of the most extraordinary animals that ever existed on our globe, but they afford us proofs of a very quiet flow of water that deposited the red clay—the recession of such water—the drying and cracking of the clay by a hot sun or air, and the return of a sharp current of water, bearing along with it the sand that formed the casts of the moulds—circumstances of great interest to those who speculate on the physical condition of the globe at that remote period. Numerous such thin beds of clay are to be met with in the coal measures, alternating with beds of sandstone, formed of grains of different sizes; still no trace of desiccation is to be found like those in the new red sandstone last described. Such may have existed, yet all evidence of them in England has been lost; but Mr. Lyell, in vol. ii., No. 4, p. 25, of the second series of the "American Journal of Science," states that he has discovered footmarks of an animal resembling the cheirotherium, in the middle of the coal field in Unity township, five miles from Greensburg, in Westmoreland county, Pennsylvania. The markings occur on slabs of stone, a few inches thick, between which are thin partings of fine unctuous clay, where casts of the animal's feet in sand are left. Thin cracks, filled with sand, also appear in the clay. These seem as if made after the animal had walked. Thus, these American flags present very similar appearances to Weston ones, before described.—Manchester Philosophical Society's Memoirs.

FRAUD IN THE SALE OF GUANO.

In our last week's journal we directed attention to a system of fraud practised upon farmers, by persons endeavouring to obtain quantities of seed wheat, to be forwarded to their order, but which had, in one or more instances, been successfully defeated, through the activity and acuteness of one of the officers of "The Guardian Society of Manchester." We now lay before our readers a report of a case tried in the Manchester County Court, and extracted from the *Manchester Guardian*, in which a fraud of a much more flagrant character, and fraught with much more serious consequences to the cultivators of the soil, has been unmasked. It appears that a so-called guano composed of "the refuse of starch works," of "spent wood from dye works," of "logwood," and "shumac," coloured with "ochre," is manufactured and sold as genuine "guano." The manufacture of this spurious article is not, it seems, confined to Manchester, but is also carried on at Liverpool, it having come out at the trial in question that the defendant in the cause "had his receipt for making guano from Mr. Evans, of Liverpool, who has made some hundred tons for a merchant there." The name of this Liverpool merchant did not, it seems, transpire; but we trust means will be taken to ascertain who this dealer in a counterfeit article by "hundreds of tons" is. We feel persuaded that the body of Liverpool merchants who are in any way engaged in the sale of articles used for manure will be anxious to relieve themselves from this serious imputation. The facts of the case alluded to, and which are fully set out in the report, are as follows:—A sale of guano having been advertised to take place in July last, a person of the name of Brown attended, and made a purchase to the value of £10 8s. His suspicions seemed to have been aroused by the conduct of the defendants, Holahan and Darcy, and he submitted a sample of this "fancy" article to Dr. R. Smith, who, upon examination, found "that it contained 70 per cent. of silica and a good deal of alumina and sand;" that "it was an ordinary sample of sand, and had not a trace of guano in it, nor was it possessed of any fertilizing qualities." He further stated that "there was not more than one per cent. of excrementitious matter in it; while in good guano there was 95 per cent." The purchaser Brown, therefore, brought his action in the County Court, and recovered, when the above facts, as to the manufacture of the article, were elicited. The defendant, Holahan, described himself as a "guano grinder"; so that the manufacture of this spurious article appears to be a recognised business. Not only is the agricultural body, but the public at large, indebted to Mr. Brown for thus exposing the wholesale manufacture of a worthless manure. The damage to the farmer in losing not only his season and his crop, but also perhaps the preparation for the succeeding crop, by the use of useless rubbish instead of a fertilising manure, is far more serious than the loss of the money which he pays for it. The injury experienced by the public at large is felt in a reduced amount of the supply of food—an evil alike serious whether it be caused by the influence of the seasons, or by the wickedness or waywardness of man. It would be a work of supererogation to dilate upon the excellence of guano as a fertiliser for all the crops ordinarily grown. The results not merely of experiments, but of its general use, will be found recorded in the Journal of the Highland Agricultural Society, the Journal of the Royal Agricultural Society, in Johnson on Fertilizers, the Farmer's Magazine, and other agricultural publications. A collection of these results adapted for practical use and reference will be found in Johnson and Shaw's Farmer's Almanack for 1849, just published. We regard the introduction of guano into this country as one of the most important events in connection with improved cultivation of the soil—a most powerful addition to a previous valuable discovery, the use of bones as a manure. With guano, as with bones, it is highly essential that the article should be genuine: both are liable to adulteration to a serious extent. There is no greater fallacy, no *ignis fatuus* half so disastrous in the purchase of manures (especially guano) as the desire to buy a cheap article, to save a pound or two per ton. We do not advocate a price beyond the market value; but we say, buy the very best article, and if you think a dressing less powerful than the genuine article will answer your purpose, reduce it by the addition of any less costly material. You will then know what you are applying to the soil; besides which, the carriage of a genuine article is less costly than a mixed one. It is better to buy your brandy and add the water according to your *own* "fancy," than to purchase brandy-and-water mixed "according to the fancy" of some one else; and hitherto foreign brandy has been found to be more effective than British. So with guano. We hold the Peruvian and Bolivian guanos to

be, beyond question, the best which have been imported into this country. The really important question is, how is the genuine article to be obtained? We reply, purchase of the importers, or of their accredited agents. The whole of the guano brought from South America comes into this country through one firm; and it is well known that their character as British merchants is unimpeachable. Disposing of the article wholesale, they, of course, cannot be answerable for its genuineness after it has passed into the hands of the retail dealers. Let the purchaser then be especially careful to enquire into the reputation of the person from whom he buys, as, upon his integrity, all depends. His character will be the best guarantee for the genuineness of the article in which he deals. Ascertain whether he makes his purchases from the importers themselves, or whether the article passes through the hands of some middle party; and if any suspicion be entertained, take samples from several parts of the bulk, and get them examined immediately. A subscription of £1 1s. per annum to the English Chemical Society will entitle the subscriber to an analysis at a small cost; and in some parts of the country, agricultural societies and farmers' clubs have a practical chemist appointed, who will make any such analysis for a very trifling charge. A knowledge that the adulteration of guano is practised should not disincline parties to avail themselves of such a valuable adjunct to their farm-yard manure: it should only put them on their guard, and induce careful inquiries and a prudent precaution when making a purchase.—Mark Lane Express.

At the sitting of the Manchester County Court on Wednesday last, before Robert Brandt, Esq., judge, the following case was tried:—

Brown *v.* Holahan and Darcy.—Mr. Myers, who appeared for the plaintiff, stated that in the month of July last his client, Mr. Brown, attended a sale of guano, advertised as "Ichaboe guano," and there purchased a quantity, for which he gave £10 8s. Subsequently, however, he discovered that the stuff which had been delivered to him as guano, and for which he had paid £10 8s. and had incurred other expenses, amounting in all to about £12, was not guano at all, but merely a lot of rubbish, without the slightest fertilizing quality. The present plaint was, therefore, brought for the recovery of the sum so paid for the "guano" and expenses. He believed that it would be attempted to be set up, that the defendants were not partners; but he should be able to offer satisfactory evidence to show that they were. Mr. Brown was then called, and stated that he attended a sale of what was advertised as "Ichaboe guano," at the Anderton Carrying Company's warehouse on the 24th July last, and that he purchased four tons of guano. The guano was brought down Portland-street, to be delivered some days after; and he then met the carts and took the guano to the Duke's warehouse, where it was to be delivered. When the carts were in Portland-street, he saw the two defendants at a street corner, about twenty yards off. Holahan was at the sale and outbid him (plaintiff) for one lot; and then, not ten minutes afterwards, offered to sell it him at cost price. Two tons of the guano were bought at £3 per ton, and two tons at 44s. per ton. He had afterwards submitted a sample of the guano to Dr. Robert Smith. The total expense of the purchase of the guano, and of the expenses in carting it, was £12 5s. On cross-examination, he stated that there were two parcels of guano sold at the sale; that the four tons which he had bought, and which were the property of the defendants, belonged to the second parcel, and that before putting it up, the auctioneer stated that it was not the same sort of guano as was advertised, but that there was a sample before the buyers and they must judge for themselves. There was a kind of stuff called "British guano," but it was not a legitimate article.—William Wood stated that he was a carter, and in the month of July last he was employed by the defendants to cart some guano from their premises, in Dyer-street, to Bank Top. Both the defendants accompanied him, and when they got to Bank Top they were met by a person who spoke to the defendants, when the latter then told him to go into Portland-street, where he would be met by a gentleman, whom he must tell that he had brought the guano from the Old Quay Company's yard. In Portland-street he met the plaintiff, and by his direction took the guano to the Duke's warehouse. He had often before done carting for the defendants who had given him the order together.—Dr. Robert A. Smith stated that he had examined the material brought to him by Mr. George Brown, and that it contained 70 per cent. of silica, a good deal of alumina and sand. It was an ordinary sample of sand, and had not a trace of guano in it; nor was it possessed of any fertilizing qualities.—On cross-examination, Dr. Smith stated that there was a slight trace of ammonia in the material, but that was the case with all soils. There was not more than one per cent. of excrementitious matter in it, while in good guano there was 95 per cent.—James Batho stated that he was a manufacturing chemist, and lived opposite the defendant's premises, where they carried on the business of manufacturers of manure. They carted thither refuse from starch works, spent wood from dye works, logwood, and sumac. He had seen both the defendants on the premises, and both seemed to be attending to the business.—Mr. Rigge then addressed the court on behalf of the defendants, stating, that he should adduce evidence to show that the defendants were not partners; that the guano was sold at the sale, subject to all faults and errors of description, and that the stuff delivered to the defendant was really composed of materials of a fertilizing quality.—The defendant, Holahan, was then called, who described himself as "a guano grinder," and said that he made guano. The other defendant, Darcy, was not his partner. The guano sold to the plaintiff, at the sale, belonged to him (witness), and the auctioneer, in putting it up, stated that it was not that which was advertised; and that it was sold subject to all faults. A good deal of real guano was mixed with the stuff sold to the plaintiff, and there was also in it the refuse of starch works, which was considered a very fertilizing article. The refuse from starch was a kind of *mineral* powder, but he did not know what. There was also some spent wood in the mixture, which he was told was very fertilizing too. He had his receipt for making guano from Mr. Evans, of Liverpool, who has made some hundred tons for a merchant there. He put in these articles "according to fancy." On cross-examination, he stated that Darcy carried on business at his yard, and was his landlord. Darcy was a general dealer, and he also made some kind of chemicals.—In answer to the Judge, he said that he used ochre and spent wood to colour his "guano."—Darcy, the other defendant, was then called, and after eulogising the

fertilizing power of starch refuse, which he stated "was considered" to be a vegetable substance, he stated that he was present at the sale, and corroborated the account given by Holahan of the conditions on which the guano was sold. He did not himself make guano. Was not a partner of Holahan.—In answer to questions by Mr. Myers, he stated that his name was John Darcy, and that he carried on business in his own name, but that the premises on which both he and Holahan carried on their business, and part of which he had sublet to the latter, were taken in the name of his brother James; and that he also carried on business at a shop in the name of the same brother. This was because James was expected to have an interest in the business carried on at both these premises; but subsequently he did not take any. Witness and Holahan occupied jointly the same office in Deansgate; he took a part of the office from Holahan.—Mr. Rothwell, the auctioneer who sold the guano, was then called; but all the material facts of his evidence are contained in that of the previous witnesses.—Mr. Myers having then briefly replied on behalf of the plaintiff, the learned Judge, in delivering judgment, said, that there was no proof that the stuff delivered differed from the sample, and he could not, therefore, assume that it did. Still, if the goods were sold under the name of guano, and what was delivered was not guano, that would alter the case. Guano meant, he conceived, primâ facie, a foreign substance, the excrements of birds. There was, however, it was true, a kind of compound manure called "British guano," and supposing the stuff delivered to the plaintiff had turned out to be, not foreign guano, but "British guano," possessing a fertilizing quality almost equal to that imported, he thought the defendants would not have been liable; but taking the evidence of Dr. Smith to be correct, that it was merely worthless stuff, and had no fertilizing qualities whatever, it became necessary to inquire whether this was sold under the name of guano, and he was of opinion that it was, and that the plaintiff was therefore entitled to recover £10, which he gave for the guano. The defendants, whether partners or not, had held themselves out as such in this transaction, and must therefore take the consequences.—His honour, on the application of Mr. Myers, allowed the costs.—Manchester Guardian.

AGRICULTURAL QUERIES.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—Being anxious, on undertaking agricultural pursuits, to obtain all the information I can, I recently ordered your valuable journal, and last week observed in it a letter signed "G. C." on the subject of *pleuro pneumonia*, and as I have been a loser by that great blow and heavy discouragement to the grazier, I trust you will afford me a small space to make a few remarks on it, first stating, that being a new subscriber, I have not seen the previous correspondence on the subject. The writer observes that it is a complication or combination of diseases. Now, as the lungs are the only part that is *apparently* affected, at least to those that are not in the habit of making frequent dissections, will he inform the public whether the lungs are afflicted with more than one disease, or whether other parts of the internal viscera are in an unhealthy state? which, if they are, has I believe escaped the notice of our most experienced veterinary anatomists. I am not sufficiently acquainted with that art to appreciate what he says about a link being wanting in the chain of cow diseases; indeed, to me the passage is perfectly unintelligible; and permit me to ask your correspondent how "the path can be narrow, and requires caution, decision, and boldness," if his medicine is, as he claims for it, a sovereign and unfailing remedy? I do not affirm that our veterinary surgeons are fully acquainted with the subject in all its bearings, but I cannot but think that if your correspondent's ancestors were cognizant of diseases, of whose very existence, much more cure, our veterinary practitioners were wholly ignorant, that the desire of fame, and, as a consequence, of profit, would have been a sufficient inducement for them to have divulged the important secret. Your correspondent may state the *principle* of his view of the disease and its cure, without parting with his hereditary secret; and until this is done, I, and I think the public too, will scarcely be satisfied with the bare assertion of an anonymous writer.

I am, sir, your obedient servant,

Nov. 9th. B. G.

A correspondent asks "the treatment to be pursued in raising mangold wurtzel seed. He has now some very extraordinary bulbs, from which he would like to raise seed the next summer, and wishes to know if they can be safely transplanted now or in the spring of the year." He also asks "if mangold wurtzel tops, carted fresh to ewes about to drop their lambs early in the approaching year, will cause abortion."

ANSWERS TO AGRICULTURAL QUERIES.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—In East Lothian they let their turnips to be consumed in the yards by beasts. Swedes usually sell from £10 to £12, and common turnips from £8 to £10 per *imperial* acre. These are purchased at the prices named, by butchers and cattle dealers, who send their beasts to the yards to consume them; the roots being cleaned and brought to the yards by the farmer, who also provides attendance for the beasts. As the manure is entirely left upon the farm, and the feeder's profit rests exclusively upon the improvement of his animals, can it be shown by figures, how he can realise a profit by purchasing turnips at the prices stated, supposing the crop to weigh 24 tons per acre? Turnips are disposed of in the manner and at the prices I have mentioned, at 20 miles from Edinburgh, and no such prices can be got for turnips (as good) at a similar distance, or less from London. Why is this?—I am, sir, your most obedient servant,

G. B. K.

WATER-CLOSET DRAINAGE, AND COAL-ASHES.

In answer to the inquiry in your last, that coal-ashes and cinder-dust, kept dry from the fire, constitute a most effective absorbent and unstinker of water-closet drainage, and that the resulting mixture is a powerful fertilizer, are long-established and unquestionable facts; and *charred* peat, turf, or even sods will do as well as coal-ashes. But to apply such a strong putrefactive manure to a plant already perishing by rot, as the potato, is of much more doubtful propriety.

J. Prideaux.

THE CATTLE GAUGE.—Arranged by John Ewart, of Newcastle-on-Tyne.—This simple little sliding scale enables the person using it to ascertain the carcass weight of oxen, sheep, and swine, by means of a slide fixed in a rule, the gauge point applicable to the case being set to the length then to the girth, gives the carcass weight in stones of 14lbs. avoirdupois. Several cases are given in illustration of its correctness.

METEOROLOGICAL DIARY—1848.

	Barometer.		Thermometer.			Wind and State.		Atmosphere.		
Day.	8 a. m.	10 p.m.	Min.	Max.	10p.m.	Direction.	Force.	8 a. m.	2 p. m.	10 p. m.
	in. cts.	in. cts.								
Oct. 22	28.80	29.60	38	46	43	S. by West	lively	cloudy	cloudy	fine
23	29.65	29.58	45	53	51	South	brisk	cloudy	cloudy	cloudy
24	29.56	29.60	48	56	50	S. West	lively	fine	sun	cloudy
25	29.27	29.70	47	55	47	N.W., S.W.	str. var.	cloudy	sun	fine
26	29.82	29.82	49	57	47	S., S. by East	gentle	fine	sun	fine
27	29.56	29.55	47	54	48	S. by E.—by W.	brisk	cloudy	cloudy	fine
28	29.53	29.65	44	51	44	S. West	strong	fine	cloudy	fine
29	29.55	29.54	43	52	40	South	gentle	cloudy	cloudy	fine
30	29.55	29.55	42	55	47	South	gentle	cloudy	cloudy	fine
31	29.53	29.58	36	53	44	N.W., S.E.	gentle	fine	sun	cloudy
Nov. 1	29.51	29.58	37	46	43	E. N. East	gentle	fog	haze	haze
2	29.70	29.75	38	48	42	Westerly	gentle	fine	sun	cloudy
3	29.52	29.45	39	52	42	W. by S., S.	gentle	fine	cloudy	fine
4	29.46	29.70	34	38	36	N. West	lively	cloudy	cloudy	fine
5	29.75	29.58	27	41	41	N.W., S.W.	variable	fine	cloudy	cloudy
6	29.60	29.59	41	46	42	Westerly	gentle	cloudy	cloudy	cloudy
7	29.53	29.82	39	47	36	N. West	gentle	fine	sun	fine
8	30.01	30.06	30	43	34	N. West	gentle	fine	sun	fine
9	30.18	30.29	29	44	34	N., N. by East	liv. calm	fine	sun	fine
10	30.30	30.33	31	45	36	N. by East	liv. calm	haze	sun	fine
11	30.32	30.32	35	44	40	N. East	liv. calm	cloudy	cloudy	cloudy
12	30.32	30.40	40	45	42	N., East	gentle	cloudy	cloudy	cloudy
13	30.39	30.35	35	46	35	Variable	gentle	cloudy	cloudy	cloudy
14	30.30	30.32	36	48	36	North	gentle	fine	sun	fine
15	30.35	30.40	31	43	34	W., N. West	gentle	cloudy	sun	fine
16	30.30	30.27	26	45	41	W., W. by S.	calm	fine	sun	cloudy
17	30.10	29.88	41	50	47	West	brisk	cloudy	cloudy	cloudy
18	29.76	29.52	41	46	41	W. by North	lively	cloudy	cloudy	cloudy
19	29.80	29.80	35	47	36	N.W., Westerly	gentle	fine	sun	fine
20	29.88	29.84	36	50	48	S. West	strong	cloudy	cloudy	cloudy

ESTIMATED AVERAGES OF NOVEMBER.

Barometer.		Thermometer.		
High.		High.	Low.	Mean.
30.270	29.080	62	23	42.9

REAL AVERAGE TEMPERATURE OF THE PERIOD.

Highest.	Lowest.	Mean.
40.20	37.73	42.96

Weather and Phenomena.

Oct. 22—Overcast and showers; several meteors; and red and white *aurora* at night. 23—Profuse rain. 24—Fine till 1, then clouds and rain. 25—Fierce wind; clearing. 26—Fine; heavy showers. 27—Much wind and rain. 28—Overcost; profuse showers. 29—Overcast; rainy evening. 30—Some gleams; some rain. 31—Hoar-frost; clouds; rainy evening.

Lunation.—New moon 27th day, 2 h. 46 m. morning.

Nov. 1—Haze throughout. 2—Pleasant; drying. 3—Generally fine; small showers. 4—A hint of snow; cold and gloomy. 5—Keen frost; rapid change; showers. 6—Overcast; wave-shaped clouds. 7—Very fine and drying. 8—Strong rime at sunrise; fine, sunny, calm day. 9—Beautifully fine; *transit of mercury* over the sun, observable from 11 A.M., till past 4 P.M.—10—Fine forenoon. 11—Fog early; overcast. 12—Overcast; drizzling rain. 13—Rain over night; finer day. 14—Beautiful. 15—Hazy, with frost; fine afternoon. 16—Keen frost; speedy thaw. 17—Change; aurora at night. 18—Rainy evening. 19—Quite fine. 20—Overcast; fierce wind; and some rain.

Lunations.—First quarter, 4th day, 6 h. 3 m. afternoon. Full moon, 11th day, 1 h. 35 m. morning. Last quarter, 18th day, 6 h. 47 m. afternoon.

N.B.—As my self-regulating thermometer was injured, the maxima of Nov. 17 and 18 may have erred by a degree or two.

Remarks Referring to Agriculture.—The happy change of the weather, at the beginning of November, enabled the farmer to plough the land. Some wheat is just up, more is sown. Turnips prosper; but the crown of all plants is the *kohl rabi;* the bulbs fine, numbers weighing 7 to 9 and 10 pounds. This plant *must* command notice in all seasons. Sharp frosts have occurred, and threatened an early and hard season; but the rapid changes, and the repeated auroras and meteors tend to moisture, clouds and brisk winds.

Croydon. J. Towers.

CALENDAR OF HORTICULTURE.—DECEMBER.

Commencing this paper at the middle of November, I shall retrospectively state that, to the close of October, the weather maintained its character; it was cold, gloomy, and profusely wet. Nothing could well be more discouraging to the gardener and agriculturist; still, vegetable productions were abundant, and excellently fine. Potatoes likewise, instead of becoming worse, had improved; and the markets were plentifully supplied with late Shaws, even retail at 10d. per peck, and also with the better sorts grown in France from English seed, the quality rich and mealy—so much so as to remind one of the fine potato of by-gone years. We hope and believe that the designing alarmists will be disappointed in every sense, and that the honest lower classes may be sufficiently furnished with their favourite vegetable diet. The weather improved as November came in: the rain gradually abated, and there were some bright days. Several frosts occurred of rather severe character; that of the 5th destroyed all the dahlias and heliotropes; it also mutilated several of the chrysanthemums, which had promised to rival in beauty their predecessors of 1847, particularly the variety with rich marone blooms. In some places the plants failed as soon as the bright sun had dissolved the strong rime then upon them; but in others they were less affected. Nothing can exceed the chrysanthemum in the elegance and durability of its flowers if the season be propitious; but it is too miffy to resist the alternations of slushing rains, hoar frosts of 5 or 6 degrees, and scalding solar rays.

Operations in the Kitchen Garden.

These, as I have often stated, must be altogether dependent upon contingences. If the weather prove wet, the less that is done by the spade the better; inasmuch as experience shows that all land (except it be very light and sandy) disturbed in bad weather is thereby rendered unprolific, cloddy ground remaining long ungenial to crops. On the other hand, if hard and permanent frost prevail, the tool cannot be used; mechanical labour being of no avail: the gardener's exertions must then be devoted to protective operations, and to the introduction of manure and removeable compost. It follows, as a matter of course, that pits, frames, and hand-lights, which can be covered by mats, straw-hurdles, and the like, present the most efficient means of protection; and where they are at command, ought to be constantly employed.

If, as it not unfrequently happens, the weather and the soil be favourably open, trench, dig, and manure; and seize every favourable opportunity for these objects. Whenever any deep trenches are formed, we would invariably place several inches of quite new horse-dung, or that from the farm and fold-yard, at the bottom: this stratum will prove a fund for years. We talk of the waste of ammonia in the dunghills; but by thus burying the new matters, replete with droppings and straw wetted by urine, the land will imbibe every product: the upper soil can be enriched with reduced manure as the work proceeds.

Leaves should be collected in heaps for many purposes; first for hotbeds, then for pits, and particularly for the forcing of asparagus. Leaves are valuable as nature's own manure: they do not, it is true, abound with nitrogen; but when heaped and frequently moistened with the liquid drainage from tanks, the mass would speedily become a potent manure.

In forcing *asparagus*, we presume that a deep bed of leaves is made in a two or three light brick pit, and that a store of three-year-old plants (grown expressly) is ready. Then, at one end or side of the bed, a five-inch ridge of dry, soft loam is laid next the wall and upon the leaf bed; open the roots so that they may fan out on the surface of the mould, and press them in a little. Pack them as close as possible, add more earth by their sides, placing another row of plants as before; and so proceed with ridges of mould and plants alternately, till the bed is planted uniformly and compactly with the crowns upright: finish with a ridge of earth next the further side, and cover the whole with two or three inches of fine yellow loam. It is presumed that the great heat of the bed had previously abated. The glasses are to be put on, for rain must not fall on the plants to swamp the earth, but tilled till vegetation begins, and the shoots appear above the soil; then add four inches more earth as a final covering. Such are the general principles: experience and observation must instruct the amateur in the regulation of the heat, the admission of air, and in giving moderate supplies of water when required.

Buck's scarlet rhubarb can now be excited and blanched, either in pots or darkened frames. *Sea-kail*, of the second crop, should be forwarded. We would fain banish the litter of the old process from the garden: the mushroom-house, or pit with shutters, instead of glass would be advantageous;

heat could then be accurately and steadily regulated.

"Cover the *mushroom* beds thickly with clean, dry straw; and do not let the mushroom house descend to a lower temperature than 50 degrees."—G. Lindley.

Cauliflowers in frames or under glasses, &c.—Give air in mild and dry days; but cover up every night, unless on those occasions when it becomes evident that there will be no frost. Such weather is not uncommon even at Christmas: the temperature at 40 degrees, the air dry and balmy from west-and-by-south! Remove yellow leaves from every plant.

Here I would suggest that a kind of self-manuring may be practised with very good effect by those who have little manure at command. It consists in digging a long trench here and there—say across a bed—and piling the earth in ridge on each side. Therein every sort of waste vegetable matter—cabbage leaves, tops of turnips, carrots, &c.—is to be thrown; occasionally chopped small by a sharp spade, and sprinkled with a handful of common salt and a shovel of lime (unless the soil be naturally chalky). After a time the ridged earth should be returned, and piled in ridge over the centre. Thus the ground will be progressively worked, exposed to the air and frost; while a fund of rich vegetable earth is forming within the ground —("*probatus probandus*").

Artichokes are directed to be earthed up by the old writers. Modern practice obtains fresh plants every year by the removal of strong suckers in April. Retaining the old stools, we merely cut away the fading leaves and flower stems, fork the soil to loosen the surface, and put a great quantity of fallen and decaying tree-leaves among the plants. In these we obtain protective mulch and the best of manure.

Celery.—Ridge very high; and, if possible, cover the summits with a pent-house of two thin boards during severe or profusely showery weather.

If fine sunny days occur and dry the *endive* plants, tie up a number, after collecting the leaves at their summits, and cover them with a large garden-pot till blanched.

Sow *peas* in frames, or upon cut, inverted turves, to be placed under glass; and raise young salads under cover. Every vegetable of the kind should be protected during winter.

Earth up the rows of *peas* and *beans;* and if the former be far advanced, protect them by short branches of spruce fir.

Forcing Department.

The fruiting pine-stove, if treated by the "drying-off" system, may be permitted to fall as low as 48 degrees till Christmas. Then the bark and leaf bed should be removed till at a heat of 80 degrees, when each pot should be saturated with tepid water; and fire-heat be raised to 60, 65, and 70 degrees, without sun, gradation. The fruit will thus be produced in a very short time. By this system a number of pine-apples come in, in rapid succession. By the new and Meudon system, the pine plants are grown in light and porous soil, without pots; and can be fruited in succession, as they attain maturity. In this process there must be no check: a genial temperature, above and below, must be maintained; the former not high at night (perhaps 58 to 63 degrees as the minimum), but regular and progressive, according to the increase of daylight. This system is far the more natural.

Vines for the May and June crop, after the house shall have been cleaned and whited, can be excited from the 15th to the 25th day.

Floral Department.

The middle of December is the middle of winter: nature—if ever—is then at rest, and excitement of any kind appears as subversive of the natural law. Cleanliness, however, must be especially required. In cold pits, where there is no artificial heat, everything that can induce damp and mouldiness ought to be absent: a crowding of plants is a great error. In the open ground, the surface may be roughly forked to air the surface and destroy insects; but the rake should not be used, because a smooth surface is sure to become sodden.

The greenhouse and pits for American plants ought to be aired at every suitable opportunity: 40 degrees will afford ample protection to geraniums, and plants of similar habits. *Roses* can be excited in pits, containing a deep bed of tree-leaves, over which a three-inch covering of sawdust may be laid. The gardener's vigilance will be required to keep a keen eye upon the approach of *aphides,* and tobacco-smoke must be frequently applied.

In secure pits, so arranged, bulbous roots—as *tulips, lachenalia, amaryllis, jonquils,* &c., &c., and also *azaleas, rhododendrons, Persian lilacs, China and fairy roses,* &c.—can be advanced.

Retrospect to this day.—The weather has been tantalizing: five or six frosts have occurred, sufficiently severe to threaten a hard winter; but all have passed in a few hours, being succeeded by wind and small rain. Several brilliant night *auroras* have been seen; and gloom has invariably resulted. After a lovely day, the weather of this morning is damp; with wind brisk from the south-west. Every vegetable product of the garden appears to be in high condition, and plentiful.

Croydon, Nov. 20. John Towers.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR NOVEMBER.

This has, unquestionably, been one of the finest Novembers on record. From its commencement till its close the weather has been comparatively clear, open, and mild, not to say vegetative. During the first ten days very little progress was made in out-door farm labours, from the damp and plastered condition of the soil; but during the last three weeks great activity was observable in the fields, and large breadths of land were finished for wheat under the most favourable auspices. A few slight frosts would now be productive of great benefit to the land, whether ploughed or lying in fallow.

The accounts which have come to hand from most of the principal growers are to the effect that wheats do not yield so well as they at one time expected. We cannot say that this is a general complaint; yet we are fully satisfied of there being a decided falling off in the aggregate yield of the country. This tolerably well ascertained fact, together with the severe losses sustained in the potato crop, led many parties to suppose that the corn trade would rule firm, and prices have an upward tendency during the winter. The large quantities of flour received from France, and the extensive imports of grain from other portions of the globe—Russia and Germany in particular—have induced great caution on the part of the dealers as well as speculators; hence prices have had a downward tendency during nearly the whole of the month. Our letters from nearly all parts of the kingdom speak in somewhat desponding terms of the future prospects of the home growers. Some of our correspondents state that we shall see wheat down to 5s. per bush. before Midsummer next. If that article is to fall so rapidly as some persons predict, they may rest assured that the principal portion of our foreign resources will be cut off long before good wheats are selling in Mark Lane at 40s. per qr.

The sales of home-grown wheat in the large consuming markets have been seasonably good, but those of barley have been small—an evident proof of the limited quantity of malt made by the principal maltsters. The stocks of last year's wheat on hand are represented as extensive; the quality being first-rate, no difficulty has been experienced in procuring adequate supplies to mix with the damp and out-of-condition parcels of new to produce good flour.

On the whole, the trade in fat stock has been depressed, owing to the more than average supplies of fat stock brought forward, and prices have had a downward tendency. Stall-fed beasts and sheep have fared well, from the large crop of turnips produced this season.

The high rates paid for really good potatoes have induced the growers in France, Holland, and Belgium, to ship that esculent somewhat liberally. During the month 8,400 tons arrived in London from the continent in good condition, and which sold at from £70 to £90 per ton. This large arrival has greatly interfered with the potato trade; and, as the shipments will, it is understood, be continued during the whole of the winter, very high prices appear to be wholly out of the question. From Ireland and Scotland very few potatoes have as yet been received in this country.

Several large sales of colonial wool have been held in the metropolis. Considering the stagnation prevailing in most branches of our domestic economy, they have passed off tolerably well, and, in most instances, prices have been fairly supported, though we cannot call the competition keen.

Only moderate supplies of hay and straw have been brought forward; nevertheless, the demand for those articles has ruled inactive at barely stationary prices.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding the imports of foreign stock have exhibited a falling off, compared with those at some former periods, we have again to report a very inactive demand for beasts and sheep in London, as well as in the large provincial markets, at, in some instances, drooping currencies. The supplies of home-fed stock brought forward—especially those of beasts—have been slightly on the increase, both as respects number and quality; and we regret to learn that the graziers have suffered severe losses by their transactions during the whole of the month. How long such a state of things will continue it is scarcely possible to say; but the solution of the question of future value must depend in a great measure upon the available supplies of stock at this time in the country. As might be expected, a great difference of opinion has been expressed on this head—some parties appearing to be of opinion that they are small, others that they exceed average ones. It would not, we conceive, be

very difficult to prove—indeed, the state of the markets bear out to some extent the truth of our remarks—that the number of beasts on most farms in the principal grazing counties is decidedly large, notwithstanding the immense increase which has been observed in the arrivals at Smithfield from some localities; but we have not yet recovered from the effects of the imprudently-forced sales of sheep which took place in the early part of 1844, when, it will be recollected, they were disposed of in a half-fat state at almost any sacrifice, so convinced were the graziers of the impossibility of contending successfully with foreign competition. However, another good year, with fair average importations from abroad, will, doubtless, bring us round in this respect, and produce a decreased value for that description of stock.

The annexed supplies have been shown in Smithfield in the course of the month:—

Beasts	19,700 Head.
Cows	544
Sheep	103,770
Calves	1,483
Pigs	2,326

COMPARISON OF SUPPLIES.

	Nov., 1844.		Nov., 1845.
Beasts	12,560		17,433
Cows	596		500
Sheep	123,200		120,390
Calves	1,040		1,060
Pigs	2,600		2,555
	Nov., 1846.		**Nov., 1847.**
Beasts	20,361		20,514
Cows	470		583
Sheep	114,460		121,320
Calves	1,186		1,608
Pigs	2,838		3,206

The average prices of stock have been as follows:—Beef, from 2s. 8d. to 4s. 2d.; mutton, 3s. to 5s.; veal, 3s. 4d. to 4s. 4d.; and pork, 3s. 10d. to 4s. 8d. per 8lbs., to sink the offals.

COMPARISON OF PRICES.
Per 8 lbs. to sink the offal.

	Nov., 1847.		Nov., 1848.	
	s. d.	s. d.	s. d.	s. d.
Beef .. from	2 4	to 4 2	2 6	to 4 6
Mutton	2 6	4 2	3 6	5 2
Veal	3 0	4 0	4 0	5 0
Pork	3 0	4 0	3 6	5 4
	Nov., 1846.		**Nov., 1847.**	
	s. d.	s. d.	s. d.	s. d.
Beef .. from	2 6	to 4 2	3 2	to 5 0
Mutton	3 8	5 4	3 8	5 4
Veal	3 8	4 8	3 10	5 0
Pork	3 6	4 10	4 0	5 2

The bullock droves from the northern grazing districts have amounted to about 6,300 short-horns; from the eastern, western, and midland counties, 3,500 Herefords, runts, Devons, &c.; from other parts of England, 3,350 of various kinds; and, from Scotland, 400 horned and polled Scots.

The arrivals from abroad have comprised 3,488 head of beasts, 13,424 sheep, 77 lambs, and 669 calves. These numbers show a slight increase, compared with those received in the previous month. The comparison of the corresponding periods in 1846 and 1847 stands thus:—

IMPORTS IN NOVEMBER.

	1846.	1847.
Beasts	2,823	3,486
Sheep	8,939	16,213
Lambs	—	121
Calves	124	667
Pigs	—	41

The total numbers landed at the outports have amounted to 6,600 head, against 6,300 ditto during the corresponding month in 1847.

Nearly FOUR THOUSAND TONS of Scotch and country-killed meat have appeared on sale in Newgate and Leadenhall markets. This immense supply has had a depressing effect upon the general demand, and prices have not been supported. Beef has sold at from 2s. 2d. to 3s. 6d.; mutton, 3s. 2d. to 4s. 4d.; veal, 3s. 4d. to 4s. 2d.; and pork, 3s. 6d. to 4s. 8d. per 8lbs., by the carcass.

JOHNSON AND SHAW'S FARMERS' ALMANAC

FOR 1849; pp. 216.
London: J. Ridgway.

In the ninth year of its publication, and with an annually increasing circulation, this work has now arrived at a position which justifies all the very considerable labour bestowed upon it by its Editors. It aims to be a laboriously condensed record of all the new discoveries which practice, combined with science, produce for the service of the farmer and the land-owner. And in doing so, it does not forget the ladies of the farmer's family or the wants of the labourers of rural life, by whom the country gentleman is surrounded. The present number abounds in all those valuable matters to which we have alluded. The mass of chemical and meteorological observations in its pages were never yet exceeded in quantity or in value in the same space of any similar work. Its meteorological records are very valuable, and although it does not profess the absurdity of foretelling the weather (as one contemporary journal, in reviewing a column whose heading he had not read, laughably enough supposes), yet it does far better—it gives a digest of many and long-continued scientific observations. It abounds, too, with matter which every lover of rural affairs will peruse with equal pleasure and instruction.

PUBLIC SALE OF PRINCE ALBERT'S LIVE STOCK AT NORFOLK FARM, IN WINDSOR GREAT PARK.—His Royal Highness Prince Albert's annual sale of live stock, selected from Norfolk and Flemish Farms, in the occupation of the Prince Consort, and also from the Home Park, at Windsor, has just taken place at Norfolk Farm. A great number of graziers, butchers, and dealers attended, not only from London and the immediate neighbourhood of Windsor, but many were attracted to the sale from distant parts of the kingdom. The stock offered for sale, independent of yearling fillies, nearly thorough-bred, the whole of which were disposed of, included 73 fat Southdown ewes, 82 two-tooth ewes of the same breed, 11 short-horn barren cows, 4 Alderney cows in calf, 20 Welsh cows in calf, 13 Welsh heifers, 31 short-horn heifers, besides half-bred Hereford heifers, and a very fine Hereford ox fit for slaughter. The stock, which realised, generally, excellent prices, was principally purchased by the London dealers and the butchers in the neighbourhood of Windsor. A luncheon, of which every one present was invited to partake, was liberally provided at the farm, by command of his Royal Highness.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ASHOVER FAIR.—The show of all descriptionsof stock was limited, and but a few changed hands. Cows and heifers at note, or nearly, were the most sought after, and the prime ones picked out at remunerating prices; the same may be said of sheep and pigs; the inferior sort was driven away unsold.

BOTLEY FAIR, Nov. 20.—The pens were extremely well filled with chiefly fine fat Down wethers. Some six-tooth made 4s. 10d. per stone; younger at 4s. 6d. do.; large half-bred and Dorset do., 4s. 4d. to 4s. 6d. do.; second-rate sheep at from 4s. to 4s. 2d. do. Most of these were sold. Large Devons (fat) went at from 10s. 6d. per score to 10s. do.; common-fed do., 9s. to 9s. 3d. do.; fat cows, 8s. 9d. to 9s. do. Lean beasts, cows, heifers, and calves were much lower, and of very slow sale. A few fat calves went freely at from 10s. to 10s. 6d. per score. Agricultural strong cattle horses sold well. All others without purchasers. Hogs were abundant, and 2s. each cheaper for large, and 1s. do. for small. Large fat swine, 9s. 6d. to 10s. per score; small do., 9s. to 9s. 3d. do.

GUILDFORD FAIR, Nov. 22.—A good number of lean beasts, Devons, homebreds. and shorthorns; prices still going down, and many remained unsold. Large oxen went at from £10 to £12 per head and lower; best heifers, in calf, £14 each; next in quality, £11 to £12; small, at £9 to £10 each; calves at from £1 to £4 10s. each; fat beasts, 9s. to 10s. 6d. per 20lbs. A moderate quantity of sheep were penned; prices as at Andover last week; trade good, nearly all sold. Large store hogs still going down in price, 3s. each lower; trade very slack. Fat bacon hogs, 9s. 6d. to 10s. per score; small porkers, 10s. 3d. to 10s. 6d. per do. Very few really good horses, such sold at high figures; of inferior, very few bid for. Among the heavy animals some strong agricultural cattle went at fair prices; aged and poor remained in the hands of the dealers.

LEEDS FORTNIGHT MARKET, Nov. 22.—An average supply of stock, and of good quality: also a good attendance of buyers; but the market was heavy throughout the day, and a few beasts remained unsold; the sheep were all disposed of, and the following prices realized:—No. of beasts, 365; beef, from 6s. 3d. to 7s. per stone of 16 lbs. No. of sheep, 2,800; mutton, 5½d. to 6d. per lb.

MALTON FAIR.—We had a large supply of cattle, which met with very heavy sale, many being unsold. Fat beasts, 5s. 6d. to 6s. per stone; in-calvers, and cows and calves, £12 to £14; English steers and heifers, £6 to £9; Irish and Scotch beasts £3 10s. to £6 each. A moderate show of sheep had fair sale; fat sheep, 5d. to 6d. per lb.; hogs, 20s. to 24s. each. A very large show of both store and small pigs met with dull sale at a decline of from 1s. to 2s. per head, with many unsold. In the shambles we had a good supply of meat, which sold well. Beef, 5d. to 6d.; mutton, 6d. to 7d.; lamb, 6d.; veal, 6d.; pork, 6d. to 7d. per lb. Pork pigs, 6s. to 6s. 6d; bacon ditto, 6s.; hams, 7s. 6d.; dry hams, 10s. 6d.; dry bacon, 8s. 9d. per stone.

MARLBOROUGH FAIR, Nov. 23-4.—Sheep: A full fair, and well attended. Sales were brisk. Some pens of very fine Cotswold wethers made 1s. each more money than the prices given at other fairs last week. First-rate Downs also commanded rather higher prices. There was also a good demand for first-rate ewes for breeding, and lambs for stock. Although some of the flocks are yet suffering from the halt or lameness, many have recovered, and are gaining flesh and strength again, their having been placed under cover at night and in wet weather, and fed with dry and generous food—those combined did wonders. The alarm among flockmasters has, therefore, greatly subsided, and they are now induced to purchase. Many who had held back for some months past are among that number. There were several pens of ewes, having lambs by their side, which sold at from 48s. to 50s. as couples. Some fine Dorset ewes, down lambing, reached 46s. ditto; Down ditto, 45s. ditto; second quality ditto, 40s. to 42s. ditto; large wethers 42s. to 44s. do.; moderate do., 36s. to 38s. do.; tegs, at from 36s. to 38s. ditto best; second rate, 30s. to 32s. There were some large Dutch sheep, which went at 38s. each. Fat wethers, of best quality, full mouthed, made 4s. 8d. to 4s. 10d. per stone of 8lb.; second rate, two and four tooth, 4s. to 4s. 6d. Fat ewes and second-rate sheep, 4s. to 4s. 2d. do. Oxen: Large Herefords, Devons, and shorthorns were in good number, yet but few found purchasers, though offered at much lower prices; smaller three-year old beasts sold rather better, yet they had to go at a considerable sacrifice to the seller. The Cow heifer and calf trade was seldom known so dead; finest Alderney and shorthorns were full £5 each lower than at the ast fair held, and at that reduction many were driven away without being sold. There were more calves than sufficed for the purchasers; large cow and bull do. for stock were much reduced in value; small do. might have been had at from 10s. to 20s. each; fat calves realized from 9s. 6d. to 10s. per score pounds. Horses were plentiful, yet but very few really good ones; best riding and driving, warranted, made but moderate prices; inferior were to be had at almost any price bid; small cobs and neat ponies were also greatly reduced in value; the heavy cart kinds were not very saleable, the quantity far exceeding the demand; such were also much lower. Hogs: This fair is noted for having many fat and lean swine for sale, and this day it did not lose its fame, either for quantity or quality; large stores were offered exceedingly cheap, yet very many did not sell; smaller pigs, of from four to six months old, also sold slowly. The fat swine were in better request; finest quality, dairy-fed and small porkers, realized 10s. 6d. per score pounds; large hogs, for bacon, 10s. do. Cheese, though not abundant, nearly all descriptions were of slow sale. Best double North Wilts (old) being scarce, fetched good prices, viz., from 60s. to 64s. per cwt.; new do., 56s. to 58s. do.; single do., 48s. to 50s. do.; double Dorsets and half cowards, of best quality, sold at 46s. to 48s. do.; next in quality, 43s. to 44s. do. Best skims made 30s. per cwt.; second-rate, 26s. to 28s. do.

RUGBY FAIR.—Good cart colts brought from £28 to £35 each. Good nags sold well, while inferior ones met a difficult sale. On Wednesday the beast fair was held, when upwards of 4,000 head of cattle were on sale. Prime beast sold at from 5d. to 5¾d. per lb., while a great number of inferior animals were sold at from 4d. to 5d. per lb. In stores, trade was very slow, and prices bad. Sheep were badly supplied, and sold at from 5½d. to 6d. per lb.

SHAFTESBURY FAIR, Nov. 23.—There were more than usual of lean cattle from the surrounding counties, as well as out of North and South Wales. Trade for all sorts of large beasts ran slack, and much lower: dealers declare that they never knew so great a fall in so short a time as they have experienced since the beginning of last October, many of their largest Devons and short-horns being worth less by £3 per head now than what was given for them then; there were some sold, yet many left without changing masters. Fine three-year-old oxen sold at £11 to £12 each; others at from £9 to £10 ditto; neat black cattle at from £6 to £7; fine heifers, near calving, at £12 ditto, some as low as £10 ditto; cows in calf with their third, at £14 to £15 ditto; six-month calves at £3 to £4 ditto; one-month ditto, 20s. ditto. Although the show of good warranted horses was a small one, there were many second-rate and inferior animals, yet to sell even the best great reduction had to be submitted to. Fine five and six-year-old carriage, coach, or hunting horses, ten hands or more, were not worth so much by £10 each as they would have made two months since; and as for second-rate, aged, and inferior, their real present value we could not ascertain; strong cart and dray horses were also offered at reduced prices; the Salisbury and Yeovil line, connected with the South-Western Railway, being suspended, has thrown a great number of strong horses out of work, and forced the contractors to sell at a great reduction: some this day, which cost within the last twelve months from £35 to £40 each, were offered at from £22 to £25 each, and then they did not find purchasers. A good show of Sheep, consisting of Downs from Wilts and Dorset, horns and half-breds from Dorset and Somerset. The holders were pressing for an advance; but in very few instances

did they obtain such. At about the Andover prices, nearly all sold. Some fine Dorset wethers reached 48s. each; half-bred ditto, 46s.; ditto Downs, 42s. to 44s.; ditto Ewes, forward in lamb (horns) fetched 46s.; smaller ditto, 42s. Tegs sold quickly, at from 36s. to 46s. each. The finest pens of large Lambs were up to from 34s. to 36s. each; moderate ditto, 28s. to 30s.; smaller, 20s. to 24s. ditto. There were many very superior fat Sheep; the largest 6-tooth wethers sold at 6½d. to 7d. per lb.; some very superior Downs reached 7½d. ditto; ordinary Sheep and fat barren Ewes barely reached 6d. ditto. The quantity of Cheese pitched was less than last year's November Fair, and much of that brought was of very poor quality. The supply was chiefly from the Dorset, North Wilts, and Somerset dairies. The primest Double White Somersets and Cheddars sold at from 66s. to 70s.; common ditto, 60s.; best North Wilts, 56s. to 58s.; ditto double Dorsets of best quality, 52s. to 54s.; ditto common singles, 50s.; half cowards were at 46s. to 48s.; ditto skims, from 26s. to 30s. per cwt. Nearly all of fair quality sold readily.

TRURO FAIR was well supplied with cattle and sheep, and though business was not brisk, a great many sales were effected. Beef fetched from 46s. to 50s.; cows and calves, 46s. to 52s. per cwt. Fat sheep, 5d. per lb. There were 840 sheep penned.

YORK FAIR, Nov. 23.—We had a small supply of fat beasts, which were readily sold at from 5s. 6d. to 6s. per stone. A poor show of sheep were soon sold at 6d. per lb. The supply of lean beasts was good, but the demand was slow; a large number of calving cows sold at good prices.

WOOLER FARMERS' CLUB.—At a recent meeting of this club the following resolution was agreed to:—"Resolved, That in the opinion of this meeting, it would be of great benefit to both landlord and tenant if in all leases or agreements a clause be inserted, making it imperative that the entering tenant shall take the away-going crop and thrashing machine at a fair valuation; thus enabling a tenant to enter at once upon the whole farm and premises, and a further covenant, binding the away-going tenant to plough the fallow quarter, he being paid the average price of the neighbourhood."—C. Howey, Chairman.

AGRICULTURAL DISCUSSIONS.—The first of a series of monthly meetings to be held at Botesdale during the ensuing winter, for the purpose of discussion on various subjects having immediate bearing on agricultural pursuits, was held at the Crown Inn, on Saturday last. A large and influential meeting of owners and occupiers were present, and most satisfactory preliminary arrangements made. The first formal discussion will be at the Bell Inn, Rickinghall, on the 16th of December, when, after a tea at half-past five, Mr. Cooke Burroughes will introduce the subject of the evening—"Thick and thin sowing in reference to all descriptions of grain."—Bury Chronicle.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF NOVEMBER.

When we last addressed our readers, great fears were entertained that the sowing season would be protracted to an unusually late period; indeed the then flooded state of the country led many to apprehend that the work would, in some cases, have to be postponed till the spring of the next year. Apprehension on this subject has, we are happy to say, in a great measure subsided, the weather having during the greater part of the month now about to terminate been favourable for freeing the soil of superfluous moisture, and bringing it into good working order. From nearly the commencement up to the 21st inst. very little rain fell in any part of the country, and we have experienced many bright sunny days, and clear frosty nights. The action of the frost has been particularly serviceable to the strong clays, and the land has on the whole worked much better than might have been expected. Every advantage has been taken by farmers of so favourable an opportunity to forward the necessary labours; the plough has been constantly at work, and in the southern, the midland, and the western counties a large proportion of the land intended for wheat has received its seed. Here and there, where too great anxiety has been shown, the sowing has been but indifferently accomplished; in the majority of instances, however, this has not been the case, and we have conversed with many farmers who express themselves quite satisfied at the manner in which they have been enabled to finish the seeding after so very unpropitious a commencement. In some of the Fen countries, and in the north generally, there is still a great deal of work to do; but the prospects as regards the future are decidedly better than they were at the close of last month. We believe that the breadth of land sown, and intended to be sown with wheat, is about as great as usual, and there is no reason to conclude that the work will be delayed very much beyond the accustomed time.

In respect to the last crop the reports continue as unfavourable as at any former period, and we are inclined to think that we have not, in the estimate we ventured to give last month, over-rated the deficiency. Potatoes seem, however, to have held out better than was expected at the time they were dug, and this article has neither been so scarce nor so dear as many anticipated would have been the case, which we are inclined to attribute to the comparatively mild character of the disease in the northern and north-eastern portions of the kingdom. The trade in wheat has, throughout the month, remained in a wretchedly dull state, and prices have gradually given way, from week to week. The downward movement has certainly not been caused by any superabundance of home produce, the fact of the last crop having turned out defective being now universally admitted. The position of our farmers is therefore far from being an enviable one. With a decidedly short yield and bad quality they have low prices; nor does there appear much chance of benefit being derived by holding, were

they so circumstanced as to do so, which a large class certainly are not. The present state of affairs has unquestionably been caused by undue foreign competition; for months past large supplies of corn, flour, &c., have reached our shores without any adequate demand, and the importers having been either unwilling or unable to hold, have endeavoured by all means in their power to effect sales from on board; hence the British grower has been almost beaten out of the market, and he has had no alternative but to give way. How long this is to continue it is not easy to determine; as yet, there are no symptoms of the foreign supplies falling off; and though we have now arrived at a period of the year when winter usually sets in, in the north of Europe, even when the Baltic ports shall have become closed by ice, we are likely to get grain and flour from France and America. We cannot, therefore, take a very sanguine view of the probable future range of prices, and certainly see no reason to calculate on any advance this side of Christmas.

The month of December is almost always a dull period, and there is nothing in the present position of mercantile affairs to lead us to expect that the ensuing month will in this respect be better than in ordinary years. The accounts from the manufacturing are nearly as dull as those from the agricultural districts, and there is a general want of activity and confidence in commercial affairs which does not warrant any very sanguine anticipations. We sincerely hope that with the approach of spring things may take a more favourable turn; nor do we altogether despair of then seeing some improvement. It very frequently occurs that when a particular event is about to take place, the effects are anticipated before the time of its realization arrives; and this may perhaps prove to be the case in regard to the removal of the duties on corn. All parties have so long been looking forward to the 1st of February, 1849, when (as our readers are aware) the existing corn-laws are to cease, that when the time actually comes round, the merchants and millers may have allowed their stocks to become so low as to have created a necessity for buying rather largely. This is not by any means an unreasonable view to take of the matter, and as in the ordinary course of things, spring shipments from the northern continental ports rarely reach this country till late in March or April, it is not improbable that for a time the foreign supplies may fall short of expectation, and our farmers be afforded a chance of obtaining somewhat better prices. In the long run, however, free-trade must have the effect of causing the value of agricultural produce to rule low in this country, and it would be well for all those interested in the cultivation of the soil to exert themselves vigorously to obtain such enactments as would tend to place them in something like a fair position to meet foreign competition. The subject of tenants' rights has lately engaged the attention of many of the farmers' clubs, and the more prominently the matter is kept before the public the better will it ultimately prove for all parties. But to return to what is more legitimately our province, we shall proceed to record the changes which have occurred during the month at Mark-lane.

Owing to the busy manner in which farmers have been occupied in the fields, they have had little leisure for thrashing or bringing grain to market, and the supplies of British-grown corn have been remarkably small—smaller than is usually the case at this season of the year, when we naturally expect a falling off in the deliveries from the growers.

The arrivals of wheat coastwise into London have not averaged 3,000 qrs. per week, and one week we received only 1,700 qrs. The quantity brought forward by land-carriage samples has been equally trifling; notwithstanding which, rather an important fall has occurred in prices. The first Monday in the month, 6th inst., factors showed a disposition to raise their pretensions, owing to the then prevailing opinion that the sowing season would turn out unpropitious. The millers, however, appeared in no way alarmed at this prospect, and conducted their operations with so much caution that great difficulty was experienced in realizing 1s. per qr. advance on the best dry runs, whilst the general qualities did not sell by any means freely at previous prices. Since then the tendency has been steadily downwards. On the 13th the article was offered 1s. to 2s. per qr. lower than on that day se'nnight; the succeeding Monday the decline was to about the same extent; and since then prices have further given way 2s. per qr.; the reduction will, upon comparing present quotations with the prices current at the close of October, be found to amount to fully 5s. per qr.

The arrivals of wheat from abroad have not been quite so liberal as they were in October; still a very large quantity of foreign wheat has been received during the month. The country inquiry has been much more limited than from the generally bad condition of the new English wheat might have been expected. This has, no doubt, been caused by the fact that there was a large quantity of old wheat of home growth on hand at the time of harvest, which has, up to the present time, rendered the country millers less dependent on foreign for mixing. Even up to the present time, a portion of the supplies brought forward at some of the markets in the agricultural districts continues to be composed of old. With large weekly arrivals, and a compa-

ratively small demand, stocks of foreign wheat in granary have increased, and there is sufficient at this port to satisfy any demand which is likely to occur during the winter months, even if no further addition should be made to the same. The operations have not been on anything like an extensive scale, but holders have had the prudence to refrain from attempting to force business, and prices have not given way so much on the best kinds of foreign as on English wheat. The first movement downwards occurred on the 13th inst., when an abatement of 1s. per qr. was generally submitted to. The Monday following, the decline amounted to 1s. to 2s.; and on the 27th prices again receded 2s. per qr. The duty has remained stationary throughout the month at 6s. per qr., and there is no prospect of any immediate change from that rate; importers do not, therefore, pay at present, but they offer the wheat either free or in bond, at the option of the purchaser, which has nearly the same effect on the market as if the whole had been cleared in for home consumption. With so large a stock of free wheat in warehouse, it would be impolitic to enter the fresh arrivals, the stock in granary being more than is likely to be wanted for some time to come; hence we are inclined to think that there will be a considerable accumulation in bond between this and the 1st of February next.

The sale of English flour has been much interfered with by the constant arrivals from France. The town millers did not alter the top price until last Monday, when they reduced their highest quotation to 46s. per sack. Norfolk household and other country-made flour has been selling at irregular rates; and the same may also be said with regard to French. The quality of the latter has proved much more various than was the case with the earlier shipments from thence; and whilst really fine marks have realized 40s. to 42s., some of the inferior sorts have been difficult to place at 36s. to 38s. per sack. Of American flour one or two large cargoes have been received; but the greater part of the shipments from the United States has been directed to Liverpool. During one week, viz. from the 16th to the 23rd, no less than 65,000 barrels arrived at that port. The price for fair brands of Western Canal flour at Mark Lane is about 30s. per brl. duty paid at present; at Liverpool the latest quotation was 25s. 6d. per barrel in bond.

In the early part of the month the market was indifferently supplied with barley, and its value continued for a time to tend upwards: the highest price realized was, we believe, 40s. per qr. for a parcel of very superior quality. Since then an important fall has occurred, owing to increased arrivals and a general indisposition to go into stock. The total decline from the top point may be fairly estimated at 5s. per qr.; it took place as follows 2s. on the 13th inst., 2s. on the 20th, and about 1s. per qr. since. Grinding qualities have not given way to the same extent; indeed, good heavy parcels could not be bought above 1s. to 2s. per qr. lower at present than at the close of last month.

The offers of barley free on abroad at foreign ports have been and continue to be numerous, which has no doubt had considerable effect in causing the reduction.

Malt, which it will be recollected took a sudden start upwards about the end of October, owing to the then prevailing opinion that the new barley would not work well, has since declined 2s. to 3s. per qr.; and 60s. per qr. may now be considered an extreme quotation for the finest pale Ware. It appears that some of the barley of our own growth, as well as a portion of the foreign, is found to make very fair malt, which, together with the great abatement in prices of barley, accounts for the reduction in those of malt.

The arrivals of oats from our own coast have at no period of the month been of much importance until within the last week or two. The supplies from Ireland were likewise very moderate; latterly, however, the receipts from thence have increased, and having besides had good arrivals from time to time from abroad, the total supply has proved more than equal to the demand. Business in this grain has throughout the month been exceedingly depressed, and prices have steadily given way. During the first fortnight quotations barely remained stationary; on the 13th a fall of 6d. to 1s. per qr. took place; the succeeding Monday the abatement was at least 1s., and on the 27th a further decline of 1s. to 1s. 6d. per qr. occurred. The fall has, however, been more on the inferior sorts of new Irish and stale parcels of foreign, than on really fine oats, which have, in consequence of their comparative scarcity, realized relatively high rates. The quality of this year's growth of oats is not generally fine, some few parcels have been received from Scotland, which left nothing to be complained of; but we have likewise had cargoes in wretchedly bad order from thence. The Irish come various, and many of the shipments from Holland, &c., decidedly bad in colour, weight, and condition. The dealers do not seem by any means anxious to hold much stock, and unless supplies diminish materially, the tendency of prices will most probably continue downwards.

The value of beans has not varied much; in the early part of the month an advance of about 1s. per qr. was in partial instances established; but this improvement has since been lost, and quotations are now very nearly the same as they were at

the close of October. At one period there was a slight disposition to buy Egyptian beans,' floating; and a few cargoes were, we believe, placed at 25s. per qr., cost, freight, and insurance; since then, however, parcels in granary have been offered relatively lower, say 26s. per qr., which price includes duty and landing expenses.

Grey and maple peas have come to hand sparingly, and have nearly maintained their previous value, good samples being still worth 38s. to 40s. per qr. in our market. Of white peas the supplies have been large from abroad, and though the quantity of English brought forward has been only moderate, quotations have given way, 40s. per qr. having become an extreme price for fine boilers of home growth, whilst foreign have been offered at very irregular rates, varying from 33s. up to 38s. per qr. according to quality.

The operations in Indian corn have been far from extensive: in parcels on the spot scarcely anything has been done; nor have many bargains been closed for cargoes to arrive. About the middle of the month there were a few buyers on Irish account, and in one instance 35s. per qr., cost, freight, and insurance, was paid for a superior cargo of Galatz; whilst for secondary sorts 33s. per qr. would probably have been paid, but the holders were generally unwilling to accept the terms offered, and the business actually done was not important. Within the last week or two the inquiry has wholly subsided, and quotations are at present little better than nominal.

The trade in grain at most of the continental markets has been influenced by the dull reports from Great Britain, in addition to which business has been a good deal interrupted by the generally unsettled state of politics over the greater part of Europe. At Danzig a total stop was put to shipments for nearly a fortnight, by a strike among the workmen, instigated and aided by political agitators. According to the last accounts the labourers had, however, returned to their work, and it was hoped that the vessels which had been delayed loading, in consequence of the state of things above referred to, would receive their cargoes, and be dispatched prior to the setting in of winter. The weather had at one time been severe, but was then mild and open. There were about 30 vessels waiting to be laden; but the wheat required to complete their cargoes was on the spot, and only required turning and preparing previous to being put on board. Really fine qualities had not receded much in price, 47s. per qr. having been paid for a parcel of fine high mixed; the common sorts were relatively cheap.

At the Lower Baltic ports prices have given way more than at Danzig; but there can be little profit on importations from any quarter at our present quotations.

From Rostock we learn that, upon thrashing being proceeded with, the wheat crop was found less productive than it was supposed to be when harvested. The quality of the new produce is also described as inferior to that of last season. The greater proportion of the wheat brought forward at that market, had come to hand in bad condition, and whilst the common sorts had realized about 35s. per qr. with difficulty, the best samples had been taken on English account, to complete cargoes, at 39s. to 40s. per qr. free on board. Some charters had been closed at 5s. 6d. per qr., for the east coast of Great Britain; but the freight then demanded was 6s. per qr.

At Stettin very little business appears to have been done either in wheat or barley; by the most recent advices we learn that quotations of the former article ranged from 38s. to 40s., and of the latter 19s. 6d. to 20s. 6d., with but little inquiry.

At Hamburg a good many purchases of grain have been made during the month, principally for shipment to London and Hull. The supplies at that port have, however, more than kept pace with the demand, and quotations have gradually receded; by the latest accounts fine Upland wheat had been sold at 43s., and secondary sorts at 42s. per qr., free on board, and there were then offers from Holstein and Denmark, at 36s. to 38s. per qr. free on board. Prices of barley had also given way materially, Saale on the spot having been offered at 26s., and grinding qualities, to be shipped from Danish and Holstein ports, at 19s. 6d. to 20s. 6d. per qr. free on board.

In the Dutch and Belgian markets all descriptions of corn have declined in value since our last, but not to a sufficient extent to leave much margin for profit on shipments from those countries to England. Still small supplies have come to hand from time to time, both from Holland and Belgium, being probably in execution of orders previously sent out.

The relative position of prices in our and the French markets might also be supposed to discourage consignments to this country; notwithstanding which, large quantities of flour, &c., reach our shores weekly from thence, and it may, therefore, not be safe to predict a falling off in the French supplies, even though shipments are apparently being made at a loss.

The advices from the Mediterranean are not of much interest, but occasional purchases of wheat seem to have been made there on British account, at prices which we should not have expected our merchants to have been willing to pay. A letter

from Leghorn, dated 17th Nov., states that a parcel of Romelia wheat had been bought for England, at 35s., and some fine Polish Odessa at 40s. per qr. free on board.

At Marseilles little or nothing appears to have been done. Supplies were expected from the Black Sea, where business would, it was thought, become more active.

From America we learn that the farmers in the interior had not sent their produce down to the sea board as freely as had been expected, and that prices of bread stuffs had been better maintained, than, considering the discouraging accounts from Europe, might have been anticipated. The tendency had, however, been downwards; and at New York, on the 14th inst., fine brands of Western canal flour were obtainable at 5d. 50c., and the common kinds at 5d. 37½ c. per brl., free on board. The shipments, though large, had not been nearly so great as many had calculated would have been the case: from New York the exports had been as follows, during the week ending 7th Nov.—Wheat 48,608, Indian corn 185,027 bush., flour 63,371, Indian corn meal 28,181 barrels.

CURRENCY PER IMPERIAL MEASURE.

	Shillings per Quarter. OLD.		NEW.	
WHEAT, Essex and Kent, white	53	to 58	46	to 56
Ditto, fine selected runs	—	—	46	58
Ditto, red	50	54	40	51
Ditto, extra	51	54	52	55
Ditto, Talavera	55	58	54	60
Norfolk, Lincolnshire and Yorkshire	46	52	—	—
Ditto, white	46	52	—	—
BARLEY, English, malting and distilling	—	—	32	34
Ditto, Chevalier	—	—	34	35
Ditto, grinding	—	—	27	29
MALT .. Essex, Norfolk and Suffolk	—	—	58	59
Kingston, Ware, and town made	—	—	58	60
OATS, Essex and Suffolk	—	—	18	20
Lincolnshire and Yorkshire (Polands)	—	—	19	22
Ditto, feed	—	—	17	20
Devon & West Country, feed or ack	—	—	16	17
Northumberland and Scotch, feed	—	—	21	25
Dundalk, Newry, and Belfast, potato	—	—	22	23
Limerick, Sligo, and Westport, potato	—	—	19	23
Ditto, feed	—	—	18	21
Cork, Waterford, Dublin, Youghal, and Clonmel, black	—	—	15	20
Ditto, white	—	—	17	20
Galway	—	—	13	17
RYE	—	—	28	30
FLOUR, best marks (per sack of 280 lbs.)	—	—	41	46
Norfolk and Suffolk, ex-ship	—	—	36	38
BEANS, Mazagan	33	35	—	—
Tick	28	32	—	—
Harrow	32	38	—	—
Pigeon, Heligland	37	39	—	—
Windsor	30	40	—	—
Long pod	28	30	—	—
PEAS, non-boilers	34	37	—	—
White, Essex, and Kent, boilers	37	39	37	39
Ditto, fine Suffolk	39	41	39	41
Maple	37	39	37	39
Hog and grey	37	38	37	38
CAKES, Linseed, English, per 1,000	£12 0s. to £12 15s.			

IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS.

WEEK ENDING:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.	Rye. s.	d.	Beans. s.	d.	Peas. s.	d.
Oct. 14, 1848..	51	11	32	0	20	8	30	4	35	2	39	2
Oct. 21, 1848..	51	7	32	3	19	11	32	4	35	9	39	7
Oct. 28, 1848..	51	0	32	7	20	4	28	9	37	3	40	1
Nov. 4, 1848..	51	2	32	10	20	7	31	1	37	1	39	7
Nov. 11, 1848..	52	0	33	7	20	10	30	5	37	2	40	2
Nov. 18, 1848..	52	3	34	1	20	5	30	10	38	1	40	6
Aggregate Average of the six weeks which regulates duty	51	8	32	11	20	6	30	7	36	9	39	10
Comparative Average same time last year	53	10	32	0	23	0	34	2	46	3	48	5
DUTIES	6	0	2	0	2	6	2	0	2	0	2	0

PRICES OF SEEDS.

BRITISH SEEDS.

Cloverseed, red 30s. to 35s.; fine, 35s. to 36s.; white, 30s. to 40s.
Cow Grass (nominal) ..... —s. to —s.
Linseed (per qr.) .. sowing 56s. to 60s.; crushing 42s. to 48s.
Linseed Cakes (per 1,000 of 3 lbs. each) £11 10s. to £12 10s.
Trefoil (per cwt.) ..... 15s. to 21s.
Rapeseed, new (per last) ..... £27 to £30
Ditto Cake (per ton) ..... £4 15s. to £5
Mustard (per bushel) white .. 8s. to 10s.; brown, (nominal.)
Turnip, white (per bush.) —s. to —s.; do. Swedish, —s. to —s.
Coriander (per cwt.) ..... 18s. to 25s.
Canary (per qr.) ..... 85s. to 90s.; fine, 90s. to 100s.
Tares, Winter, per bush. ..... 10s. 6d. to 10s. 6d.
Carraway (per cwt.) ..... 28s. to 29s.; new, 30s. to 31s.
Rye Grass (per qr.) ..... 17s. to 38s.

HOP MARKET.

BOROUGH, MONDAY, Nov. 27.

The superiority of last year's growth of Hops over the present, and their relatively low price, have begun to attract the attention of purchasers; and a considerable business has been done in yearling Hops at an improvement upon last week's rates. For fine new Hops we have a steady inquiry, at the annexed quotations:—

Sussex pockets	45s. to 58s.
Weald of Kent	48s. to 65s.
Mid. and East Kents	52s. to 120s.

HORTON & HART.

POTATO MARKET.

SOUTHWARK WATERSIDE, Nov. 27.

The arrivals from Yorkshire up to the present time have been less than for many seasons, which has not been much felt, as our market continues to be well supplied, both from Scotland and the Continent; the supply of the latter continues to be so liberal that prices have but little chance of advancing. The following are this day's quotations:—

Yorkshire Regents	100s. to 160s.
Scotch ditto	110s. to 130s.
Ditto Cups	60s. to 90s.
Ditto Reds	60s. to 90s.
Ditto Whites	60s. to 85s.
French and Belgian Whites	60s. to 80s.

WOOL MARKETS.

LIVERPOOL, Nov. 25.

SCOTCH.—There is no improvement to notice in the demand for Laid Highland, neither is there in white. There has been rather more inquiry for the better class of Cheviots.

END OF VOLUME XXIX.

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.